This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

The wild rabbit in a new aspect, or, Rabbit-warrens that pay

John Simpson

Digitized by Google

KD
14

William Cameron Forbes

Digitized by Google

Digitized by Google

N. Cameron Forbes

1897

Digitized by Google

Digitized by Google

THE WILD RABBIT

Digitized by Google

Digitized by Google

A BOOK FOR LANDOWNERS, SPORTSMEN, LAND-AGENTS, FARMERS, GAMEKEEPERS, AND ALLOTMENT HOLDERS

THE WILD RABBIT

IN A NEW ASPECT

OR

RABBIT-WARRENS THAT PAY

A RECORD OF RECENT EXPERIMENTS
CONDUCTED ON THE ESTATE OF THE RIGHT HON.
THE EARL OF WHARNCLIFFE AT
WORTLEY HALL

BY

J. SIMPSON

WOOD-AGENT, ETC., WORTLEY HALL, SHEFFIELD

WILLIAM BLACKWOOD AND SONS
EDINBURGH AND LONDON
MDCCCXCIII

All Rights reserved

Digitized by Google

KD 47514

HARVARD
UNIVERSITY
LIBRARY
050*136

Digitized by Google

CONTENTS.

CHAP.		PAGE
I.	INTRODUCTORY,	1
II.	THE WILD RABBIT,	14
III.	THE DEMAND FOR RABBITS AS AN ARTICLE OF FOOD,	22
IV.	WEIGHT AND CONDITION OF RABBITS IN WARRENS,	28
V.	CAUSES OF FAILURE OF RABBIT-WARRENS IN THE PAST,	31
VI.	NUMBER OF RABBITS WHICH ONE ACRE OF GRASS WILL FEED,	39
VII.	HOW RABBITS FEED,	57
VIII.	STOCK REQUIRED FOR BREEDING PURPOSES PER ACRE,	63
IX.	HOW TO LAY OUT A WARREN,	66

Digitized by Google

X. THE WORTLEY RABBIT-TRAP-FENCE AND ITS ADVANTAGES, ... 89

XI. CARE AND CULTURE OF THE PASTURE IN RABBIT-WARRENS, ... 97

XII. ENEMIES OF THE RABBIT, DISEASES, ETC., . 107

XIII. A SPECIAL CHAPTER FOR FARMERS, . . 116

XIV. A CHAPTER FOR ALLOTMENT HOLDERS, . 131

Digitized by Google

THE WILD RABBIT.

CHAPTER I.

INTRODUCTORY.

For some years back the author of these chapters has been practically interested in rabbit-farming on the estate of his noble employer, the Earl of Wharncliffe, by whose desire the thoroughly equipped experimental rabbit-warren in Wortley Hall Park was made, and by whose liberality and permission the whole of the experiments,

Digitized by Google

&c., recorded in the following pages have been carried out to a successful issue—it is hoped, with a prospect of usefulness to all who are interested in such subjects. About four years ago the author addressed one or two notes to 'The Field' on the subject of rabbit-warrens, as much to obtain information as anything else, which brought him a great deal of correspondence from gentlemen and land-agents in various parts of the three kingdoms, all deeply interested in the subject, and anxious for information. These correspondents, a number of whom have been here to see the warren, had land on their hands, in some cases amounting to several thousands of acres, suitable for warrens, to which purpose they were ready to put it with any reasonable prospect of success, if they only knew

Digitized by Google

how to proceed on any better plan than the haphazard system at present followed. This, coupled with the conviction forced upon the author that rabbit-farming and warren management were very imperfectly understood, or not understood at all, and that they could be made a much more lucrative business than is generally supposed, has induced him to offer this book to the public, or to that portion of it interested in such matters. Much that the author has to record he believes to be new, and has been derived from practical experience on the Wortley estate principally, where, so far as he can discover from books and other sources, the record of the number of rabbits produced to the acre (a crucial point on which no reliable data appear to exist) has been beaten, if, indeed, anything approaching the

Digitized by Google

Wortley record has ever been published, or any similar experiments made. The subject is one that does not appear hitherto to have interested agricultural writers, for in the most modern and exhaustive works on land and farming the rabbit hardly finds a place, unless it be under the head of "vermin." The game-dealer seems to understand the rabbit only as a valuable and popular article of food, and his demand is merely limited by the supply.[1] The immense number of rabbits which a few dealers in the same town will buy in the course of one week, and dispose of while they are

[1] Since this was written I have had reason to believe that there may be exceptions to this rule. Some time ago, in a land arbitration case that came before the court, the question of the profits of rabbit-farming came up, examples of which were given privately. A friend volunteered to get me the facts for future use, but wrote me later to say that the parties concerned did not wish their success made public, adding that

Digitized by Google

still fresh and good under the inspector's eye, would hardly be credited by those who are not familiar with the market. There has been, the author is aware, a good deal written about rabbits in one shape or another; but such writings the reader will soon see have little or nothing in common with the scheme suggested in this work. This scheme is one by which landowners and farmers may, the writer believes, raise as many rabbits as they desire for sport or profit, and at the same time rid their woods and farms of one of the most destructive scourges that can afflict the one or the other,—a pest (as hitherto tolerated) but for which,

"the reason of this secrecy is that the concern is a paying one, and I believe it is so much so in the case of one party that he is afraid of the amount of his profits reaching his landlord's ears, and having his rent increased in consequence." My informant, I may say, is a gentleman who is not likely to be misled in such matters.

Digitized by Google

probably, obnoxious Ground Game Acts would never have been demanded or passed. Extensive acquaintance with woods in England and Scotland has shown the writer, as it has shown others similarly employed, that the loss caused by rabbits, *at large*, on estates, has been simply appalling in times past, and still is, only the fact has not been sufficiently realised by proprietors. There are numbers of estates on which the destruction to plantations by rabbits has far exceeded the damage from all other causes put together — estates, in fact, where there is nothing to show for extensive and costly plantations once made and now non-existent. And this takes no account of the customary damages claimed by tenants from the landlord for destroyed crops—a constantly recurring grievance,

Digitized by Google

for which the landlord has always to pay in some shape or other in the end.

The rabbit-warren at Wortley has been formed by the noble owner mainly with the object of getting rid of the troubles and evils here described, and has been made and superintended, in its cultural and economical aspect, &c., by the author in his capacity of wood-agent on the estate. During the past four seasons the experiment has been a complete success, inasmuch as there have been more rabbits for sport than ever before, and rabbits of better quality, although the warren has been laid out in a park that has been worse overrun with rabbits for twenty-seven years, to the writer's knowledge, than any other part of the estate. Crops and woods have been saved from damage, and temptation to poachers has been

Digitized by Google

removed over a wide tract that had formerly to be regularly watched, while, in the warren, the latter have had little or no chance of carrying on their depredations. The scheme proposed and practised at Wortley is based upon the principle of regarding the rabbit in the same light as any other farm stock, and treating it on the same principle, according to its nature and wants. After much inquiry, the author has failed to find a single example of a warren conducted on these lines; but he has found numbers of examples to the contrary —viz., disregard of the most ordinary rules of stock-farming, and of pasturing the ground with rabbits till the pasture had become exhausted and incapable of sustaining them in health or condition any longer, without an attempt even to restore the fertility of the soil by put-

Digitized by Google

ting back an equivalent, in the shape of manure, for the flesh and bones which the animals had carried away on their backs for years in succession, representing the richest ingredients of the soil. Indeed when the warren was enclosed here, and it was proposed to raise a less number to the acre than has actually been produced, and to use lime and manure, &c., even gamekeepers of experience and others predicted nothing but disaster. The rabbits, however, instead of becoming diseased, smaller in size, or deteriorating in any way, have been both bigger and healthier, and promise to go on thriving while the conditions of their healthy existence are maintained. In fact, it was soon discovered that keepers and others who professed to know most about rabbits had really no data worth a straw as to what

Digitized by Google

might be accomplished by methodical and intelligent management, and their opinions were disregarded. The common opinions entertained about warrens getting "rabbit-sick," and rabbits becoming diseased, &c., are not without foundation; but the causes of these evils are not understood. The first essential in rabbit-manufacture is a good frame of bones, which must come out of the pasture in some form; and it is the writer's conviction that deterioration in size and condition, so often seen in old and exhausted warrens, is due to neglect on this point more than to anything else. Rabbits select their food with no little discrimination, when they have a chance; and the way in which they will crop a patch, that has recently been salted and limed, to its exact limits, and as close as a carpet, must be seen to be

Digitized by Google

believed. When we first began here, the lime and manurial agents were applied in squares here and there in the field for experiment, and during the season these patches were distinctly visible a long way off by their superior verdure, and go when one liked, the rabbits were always found in large numbers on these spots. As many as sixty or more have been counted on one patch about fifty feet square at the same time.

In concluding this chapter, it may be added that gentlemen interested in rabbit-warrens, who have visited the Wortley warren, and satisfied themselves as to the number to the acre, &c., have said that the experiment should be carried on for ten years or more before the success of the system could be assured. There would be force in this argument if it had not been abundant-

Digitized by Google

ly proved, as stated elsewhere, that large numbers of rabbits have been taken off ground year after year for a much longer period than ten years, *where no intelligent culture of the ground has been observed at all.* Moreover, the warren here, before the ground was enclosed, lay between two woods, and was always overrun by rabbits to such an extent that abatements were claimed on the annual valuation or rent for the damage they did; and *since it was enclosed*, four years ago, and some attention given to the land, the pasture has improved greatly, under a larger stock of rabbits than ever. It may be safely concluded, therefore, that this improved state of things will continue, — for I know of no reasons, theoretical or practical, for supposing that rabbits, or any other

Digitized by Google

stock, will cease to breed and thrive on the same ground, so long as the healthy conditions of their existence are provided for them.

Finally, it appears to the author that the present time is opportune for suggesting rabbit-farming as an extremely likely prospect and practically unexplored field for landowners and farmers, who are at their wits' end to make their land pay; but they must cast aside prejudices and baseless preconceived opinions on the subject, to begin with. It is not long since the 'Farming World' hazarded the opinion that rabbits might be one refuge for the farmer in the future,—a guess probably not so very far from the mark as some imagine, and which the author believes may yet be fully verified when the subject comes to be better understood.

Digitized by Google

CHAPTER II.

THE WILD RABBIT.

THE wild or common grey rabbit is the variety best adapted for warrens, whether conducted for sport or profit, and also the most popular for market purposes. It is said that the wild rabbit was originally introduced into this country from Spain, and that there is now no country in Europe where it is so plentiful, or so popular as an article of food, as in our own, having greatly increased in recent times. In some parts of Germany, I am told by German

Digitized by Google

foresters, the rabbit is so feared on account of its destructive habits that it is exterminated wherever found, and is practically unknown by the common people as an article of food.[1] Forty years ago the writer knew large tracts in Scotland where no wild rabbits existed, but where they now abound, and have become such a scourge on farms and plantations that on some very large estates they have been killed off again—nearly 100,000 rabbits having been destroyed on one estate in a short period not long since.[2] In such

[1] A gentleman well acquainted with the Continent informs me that Germans, as a rule, will not eat rabbits. They declare that the meat is too sweet.

[2] According to Sir Arthur Grant, Bart. of Monymusk, Aberdeenshire ('Gardeners' Chronicle,' January 14, 1893), of the four pests of the forester "that did *not exist* in this [Aberdeenshire] part of Scotland" when the older plantations were planted, the rabbit was one, and stands first in the list of obstacles to home timber-growing.

Digitized by Google

cases total extermination is to be regretted, for, as at Wortley, it is easy to exterminate rabbits on an estate, and still have plenty for all purposes in a warren. I am assured, also, that in many parts of England rabbits are much more plentiful than formerly, and there is good reason to believe that if it had not been for this increase, the Ground Game Act, as already said, would never have been proposed.

The nearest approach to the wild rabbit, among tame kinds, is the dark "silver grey," a beautiful variety, differing in no respect from the wild type except in colour, and said to be as good for warren purposes. Naturalists tell us that the wild rabbit prefers sandy heaths and dry grounds covered with juniper and furze, &c.; but my experience of the rabbit in many situa-

Digitized by Google

tions convinces me that it delights most and thrives best, and certainly pays best, wherever food in the shape of good rich pasture is most abundant, and where it can burrow in *dry ground* of any kind. It can soon drive a tunnel into the hardest loam or dry clay; and I have known it burrow deeply in a surface seam of coal, and scatter the lumps yards away from the entrance. Experience of the rabbit in Australia seems to corroborate the idea of its preference for good pastures and a genial climate. Another statement of the naturalist is, that "the rabbit in a wild state is monogamous," and that "the attachment of a pair continues for life." He has exaggerated notions, also, regarding the rabbit's productiveness. Both points are of importance to the rabbit-farmer, and he must be under

Digitized by Google

no illusions about either. That a pair of rabbits will live together in an *isolated* burrow, for one season at least, and *raise* perhaps from ten to twenty young, including second and third generations, according to climate and circumstances, during the breeding season, I admit, for I have taken note of such instances now and then; but in well- but not over-stocked warrens or coverts it is not safe to reckon on more than the smallest of the above number coming to a good saleable size. This discovery is the only disappointment I have met with, after reading the naturalist's marvellous calculations and discounting them liberally; and a careful inquiry into the bags made on estates will, I believe, show this statement to be true. Nor in well-stocked warrens is the rabbit monogamous, for we find

Digitized by Google

that the does produce freely when the bucks are much fewer in number than the does—by far the best arrangement too, as will be shown further on. Odd clutches of young rabbits are occasionally produced under favourable conditions right through the winter; but the regular breeding-season is from February till September, and that period may be much shortened by an unfavourable season or a cold exposure. Early rabbits breed the same year, but the best rabbits are those produced by the last year's stock — for the market, at least. That the wild rabbit would, in a tame state, multiply very much faster than it does under the most favourable circumstances in the wild state, provided it is methodically managed, I have proved on a limited scale. But the attention necessary under such condi-

Digitized by Google

tions is great, and that, coupled with the great amount of food required, renders such attempts much more expensive and less profitable than warren-farming conducted intelligently; and the money required for the hutch and enclosure system, on a remunerative scale, would go far to enclose a warren of fair size.

Buck rabbits are, as a rule, larger and heavier than the does, and are worth more money; but in the warren the fewer the bucks left, within certain limits, as *breeding stock*, the better. When too numerous they torment the does, and often kill the young ones before they leave the nest. This is probably one reason why does, while their young are still in the "down," when they leave the burrow to feed generally close the entrance securely up by drawing the soil and grass in, and ramming

Digitized by Google

it firm—often to a depth of six inches. I have frequently seen burrows, of small capacity, and not an arm's-length deep, stuffed so tightly for hours that one would have imagined the young would have been suffocated; but on putting in my hand, I always found them comfortable and lively.

Digitized by Google

CHAPTER III.

THE DEMAND FOR RABBITS AS AN ARTICLE OF FOOD.

If it does not pay the farmer to produce rabbits, it is certainly not because the demand is limited or the price unremunerative. As an article of food, the rabbit is esteemed by all classes,—is relished by the invalid as much as by persons in robust health, served by the expert cook in a dozen dainty ways, and regarded almost as a luxury by the poor, to whom the rabbit often affords a means of making a savoury dinner, with

Digitized by Google

the aid of food-scraps, such as could not be easily procured in any other way. In all towns and populous districts the demand is practically unlimited, and has increased since the Ground Game Act came into force. It might be supposed that the market would be glutted when the shooting season is in full swing, and thousands of rabbits are disposed of daily from many estates; but that is not the case, and game-dealers compete keenly with each other for the chance of securing the rabbits at shootings, and will attend and remove them the day they are shot, and pay cash down if required. The dealers find ready buyers at from 2s. 6d. to 3s. 6d. per couple, and a little less for the smallest and worst shot; but a considerably better price can be got for *hand-killed* rabbits than for shot ones.

Digitized by Google

A rabbit-farmer who raises rabbits exclusively for the market, who catches and kills them in the easy and ready way described in another chapter, and sends by regular instalments to the market, can make a much better bargain than the sportsman who keeps his rabbits on the ground longer for sport. The rabbit-farmer, as prices have been for a long period, may safely reckon on from 1s. to 1s. 3d., on an average, per rabbit of fair size and condition, and in every warren the rabbits are usually pretty uniform in these respects.

A demand likely to increase is a supply of live rabbits for stocking warrens, and these seldom cost less on the ground than from 4s. to 4s. 6d. per couple. Should rabbit-farming ever assume the dimensions anticipated by some, the earliest in the field will of course have

Digitized by Google

the first and best pull. For coursing purposes there is also a steady demand, and those who do not object to supplying rabbits for that purpose can easily get from 4s. to 5s. per couple for good ones. Some owners of warrens also let the shooting, charging about £10 per gun for the day's sport, retaining the rabbits for the market, and selling them afterwards for 1s. 6d. or 1s. 7d. per couple—good, bad, and indifferent.

Notwithstanding what has been written about breeding tame rabbits for the market by the hutch system, I am assured by large dealers in towns that there is practically no demand for them, and that the supply is quite insignificant; whereas wild rabbits, both shot and hand-killed, are displayed in the game-dealers' shops in greater numbers than any other kind of game. It is nothing

Digitized by Google

unusual in large towns to see hundreds suspended in front of one shop at a time, nearly the whole of which must be sold within a short while if they are to be sold at all. And the towns are not the only markets, for that numerous class of hawkers who go round with fish and vegetables, &c., among the villages of Yorkshire and elsewhere in populous districts do a good trade at fair prices, and are glad to buy at first hand always. Hotel-keepers are also regular and good customers, and always ready to contract with the producer with mutual advantage. Tinned rabbits from abroad are now regularly quoted by provision-dealers, and sold even in country shops, 2-lb. tins costing 1s. 4d.,—a fact which speaks for itself, as if fresh rabbits were more abundant tinned ones would not find so ready a market. No

Digitized by Google

rabbit-farmer need depend on the local market exclusively, as the game-dealers in all the large towns have business connections in the rabbit trade hundreds of miles distant, and a sixpenny advertisement in the newspaper, in the right quarter, will soon bring offers.

Digitized by Google

CHAPTER IV.

WEIGHT AND CONDITION OF RABBITS IN WARRENS.

RABBITS of the *same warren* may be large or small, or in poor or good condition; but, in proportion to their age, they will run pretty regular in those respects. Rabbits in *different* warrens and different pasture, however, vary greatly, from causes easily explained and well worth studying. In the warren here, couples have been killed out of promiscuous batches that weighed 7 lb.; plenty of single rabbits weighed

Digitized by Google

3 lb.; and odd lots out of our experimental acre have been sold to the village shopkeeper that averaged $2\frac{3}{4}$ lb. Our general average is about $2\frac{1}{2}$ lb. in September and October. These weights, be it remembered, are for rabbits fed exclusively on the pasture in the warren, and that have never received artificial food, except a little hay and corn during snowstorms and severe weather, to keep them alive. The general average weight of wild rabbits in the market is, however, less than the above. Very large and well-known dealers in Manchester and Leeds and elsewhere, who have kindly furnished me with information on this head, assure me that the general average does not exceed 2 lb. The main cause of this light weight is the number of poor ill-fed rabbits from poor warrens

Digitized by Google

that are sent to the market. I know warrens where very few rabbits exceeding 2 lb. could be found, but many under that weight.

If you speak to keepers on this subject, they will seldom admit the cause of these light weights to be one to a large extent under their own control, the common explanation being "the want of fresh blood," &c., whereas in nine cases out of ten it is want of sufficient food of the right quality. Fresh blood is no doubt a good thing now and then; but no amount of it will make up for starvation, or a poor pasture to which restorative measures are never applied. Besides, fresh blood is expensive: we find here that it cannot be had under 2s. or 2s. 6d. per rabbit, not including carriage, hence this market is not a bad one for the vendor.

Digitized by Google

CHAPTER V.

CAUSES OF FAILURE OF RABBIT-WARRENS IN THE PAST.

I KNOW of no rabbit-warrens except the one here conducted on the principle recommended in this book, or of any systematic attempt to deal with the problem of rabbit-farming on a practical and scientific basis, and I have made diligent inquiries enough.[1] Judging

[1] Since this was written I have received from H. E. P. Welch, Esq. of Leck Hall, Westmoreland, an account of his warren there, showing how successfully he has solved the rabbit difficulty by the scheme referred to above. Mr Welch's warren is not exactly on

Digitized by Google

from observation of how warrens are usually conducted, and from correspondence, the universal custom on estates appears to have been as follows: All the best land on the estate has been let, farmed, or planted, and the worst piece of ground, unfit for any other purpose, if it existed, made into a *rabbit-warren;* and from this miserable tract or patch expectations of success have been entertained that no rational land-agent or farmer would ever think of expecting from farm stock of any other description under the same circumstances, or even with good land to begin with. The surprising fact is, that from warrens of this kind, that have

all-fours with the Wortley warren, but the object and the means used are similar, and the debtor and creditor account is a satisfactory one. This is the only outside example of a methodical attempt to deal with the matter which I have discovered.

Digitized by Google

never received any cultural attention in the way of tillage and manure, large bags of rabbits have been not only expected but actually got for many years in succession. But the result has always been the same in the end, and what was certain from the beginning—viz., a gradual reduction in the number and size of the rabbits, till the warren became practically exhausted. Still, if even indifferent bags can be had for years in succession from poor land that has never had anything done to it, what may be expected from a good pasture kept up to the mark, and skill and experience brought to bear on its management, and stocked to its fullest capacity?

To show what is done *without* these aids, let me give one example of numbers I know of. Not long since I was

Digitized by Google

over a warren with the owner, who told me that nothing had been done to it, in the way of culture and tillage to the pasture, for about thirty years. Yet fair bags have been had annually from this warren—well known to sportsmen—during the whole of that time, but have gradually decreased in bulk and quality. The warren lies contiguous to a noted grouse-moor, belonging to the same gentleman, and consists of a bare hillside, about 1000 feet above the sea-level. I am told that from ten to fifteen rabbits to the acre is about the least number shot in one year; but this is only approximate, as much of the ground is bracken and other cover. The reason why this warren has not been dressed or manured is the cost of the carriage of lime and other materials from a distant railway-station, and the

Digitized by Google

inaccessibility of the ground to wheeled vehicles, — reasons that do not exist nowadays in many cases. Of course, where waste or poor ground exists on an estate, that is not worth while reclaiming for any other purpose, it may as well be made a warren of as anything else; but such examples are no criterion to go by, for those who wish to make the most of the land. In the many letters I have had from gentlemen about their warrens, the unanimity of their experience is amusing but instructive. All have allowed the ground to become impoverished or overrun with weeds, killing as many rabbits as they could off it every year at the same time. One agent thought that the more the rabbits were killed off every autumn, the better they would multiply,—as if rabbits grew out of the

Digitized by Google

ground like rushes! His plan was a failure, however, and it was easy to show by the bags made that about one doe to two or three acres was the amount of stock left at the end of each year for breeding purposes. A Scottish factor or agent writes me for advice about a warren that years back produced per annum about 20,000 rabbits, but which had gradually dwindled down "to less than half that number," adding that *no artificial food had ever been given, and that it had never been thought needful by the owner to dress with lime or manure* during nearly twenty years. Sheep and cattle had also been grazed on the land when food was to spare. This is quite a typical example, — a warren of poorish land, from which between 40,000 and 50,000 lb. weight of flesh and bones — the very richest and

Digitized by Google

most valuable of fertilisers—had been removed from the soil every year, *and nothing put back.* Was the decrease to be wondered at? The wonder is there were any rabbits left at all. Keepers say of such warrens as this, that the ground has got "rabbit-sick"; and so it has, but it is mainly sickness arising from starvation. Year by year the land gets poorer under this treatment, until it becomes quite exhausted and unfit to support anything. No farm crop nor stock of any kind can be expected to thrive for long under such conditions, and rabbits are no exception to the rule, while they are exhaustive feeders.

These are some of the reasons why rabbit-warrens fail. *Impoverishment,* combined with a soured and tainted condition of the pasture, caused by want

Digitized by Google

of lime, salt, and other dressings, is the whole secret of the matter, aggravated in many cases by an indiscriminate destruction of the breeding-stock.

Digitized by Google

CHAPTER VI.

NUMBER OF RABBITS WHICH ONE ACRE OF GRASS WILL FEED.

THIS is the crucial point in rabbit-farming; and unless I had felt able to answer the question in a satisfactory way, I should not have attempted to write this book. My estimate of the number of rabbits an acre of grass will feed up to a saleable size is a high one, but I believe that number could easily be exceeded with high culture of the land. The problem is to feed the greatest number at the least cost consistent with

Digitized by Google

the permanently good and healthy condition of the pasture. When the warren was enclosed here I was "at sea" on this point, and could get no reliable information from any one. I was advised to get certain books on warrens, and I got them; but found that, although dogmatic opinions on rabbit-farming and its profits and losses were indulged in freely, no information was given on this point. The total annual bags from reputed good warrens were furnished, and where the acres happened incidentally to be given also, I found what the number of rabbits was per acre by the simple division rule; but the result was altogether unsatisfactory, the average total number of rabbits produced being less than what I reckoned necessary for breeding after the "crop" had been marketed. There was nothing for it

Digitized by Google

but to find it all out, and this I have done in two ways, with fairly uniform results. The first way was to test the matter over the warren as a whole; and the second, to enclose an experimental acre for the purpose.

First,—As has been stated before, the Wortley warren lies high and inland, with a distinct inclination to the north-east. Consequently the grass is late in beginning to grow, and the herbage not of the best quality for feeding purposes, according to the grazier's experience. Besides, the ground consists of very old park-pasture, that was overrun with rabbits as long as any one can remember before the ground was enclosed, at which time it was in a poor foggy state in many places. Since then the land has received no manure except dressings of gas-lime on the worst parts,

Digitized by Google

and slight dressings of salt — the two things it stood most in need of, and which produced a marked effect on both the pasture and the rabbits. Practically, as everybody about here knows, we started on an old rabbit-warren, which is a very different thing from starting on a rich meadow in good heart, from which even better results could no doubt be got.

Second,—Our rabbits are raised for shooting, and are netted up by the trap-fence contrivance in autumn, to the number of about 3000 annually, and removed to Wharncliffe Chase—an extensive tract furnished with natural cover—for sport, where rabbits are also bred. Knowing, therefore, exactly what number is counted out of the warren in autumn, and pretty nearly what is left in, and knowing the number of

Digitized by Google

acres available to feed them, we get very near the mark as regards the number per acre. There are rabbit-warrens I know of which are stocked for shooting purposes up to the very day of shooting, the rabbits being got from other parts of the estate, or anywhere—poachers not infrequently bringing them from perhaps the next estate and selling them to the keeper, who asks no questions. In the Wortley warren, however, the *whole of the stock is raised inside the warren.* The rest of the estate has been thoroughly cleared, and is kept cleared by tracking stray rabbits to their holes after the pheasant-shooting. A few does taken alive are put into the warren there as stock. In short, there are practically no rabbits on this estate except those enclosed in the warrens by rabbit-proof fences, and the

Digitized by Google

best proof of this is the condition of the farm crops adjoining the woods, and extensive and thriving young plantations open and unprotected by wire-netting, where not a tree has been touched — things never seen here before, previous to the formation of the warren. The warren pasture is just about seventy-seven acres in extent, according to the Ordnance map and our own survey; but about *one-half* of that area has fed the rabbits. The ground is subject to a number of encroachments. Before it was enclosed it had a wood on both sides of it, where all the rabbits were bred. When the fence was put up, the plantation on the west side was shut out, the rabbits exterminated in it, and all vacancies and some additions planted with young trees. On the east side a

Digitized by Google

strip of wood, where were the only burrows left, was enclosed the whole length of the warren. As this wood consists mostly of old oak, with an undergrowth of elder, rhododendrons, and bracken, with no grass, it was given up to the rabbits, as they could not do it much harm, and we did not wish to destroy the natural burrows on both sides. The grass pasture, or feeding-ground, is a piece of ground about 1100 yards in length, divided into two nearly equal parts by an estate-road that goes through it. The consequence of these arrangements (remedied afterwards) was, that the whole of the rabbits were driven into the wood on the east side, and bred there. Two ridges of artificial burrows were thrown up on the other side of the road, but the rabbits took a year to find them out thoroughly.

Digitized by Google

There was also frequent traffic on the road both day and night, and the result was that, during the first season, the rabbits were fed almost wholly on one-half, or less, of the seventy-seven acres on the east side of the road, which they rarely crossed. Owing to this the east half was cropped pretty bare, and the west half hardly touched at all. It was not the intention to turn cattle into the warren, as they injured the wire-fence ; but in July and August sheep had to be turned in, the grass having got so tall and rank, to help to eat it down. After that, so much was still left on the west side that in spring the rough dead tussocks had to be burned. In September and October of this, the first season, 3000 good live rabbits were caught and sent up to Wharncliffe Chase, and a large number left.

Digitized by Google

Our head-keeper and myself afterwards went carefully over the ground, and our estimate was that from thirty to thirty-five acres had fed the lot, or nearly 100 rabbits to the acre, including stock left. Any casual observer could easily tell where the feeding had been done, it was so clearly marked, — which will be explained when we come to describe how rabbits feed.

The second year more sod-burrows were thrown up on the uneaten west side, till we had about 300 yards of them equally distributed from end to end of the piece. In these we made entrances, and put rabbits into them in winter, to ensure an evener distribution of the number on both sides of the road. The breeding-stock, however, was about the same as in the previous year, and the result was practically the same.

Digitized by Google

The side next the oak-wood was not cropped so bare as before; but instead the grass was cropped round the breeding-ridges on the other side for a short distance, and between these patches large tracts were untouched, when cattle were again turned in, and more rough grass burned in spring. Another 3000 rabbits were taken to Wharncliffe Chase in autumn, all as fine and healthy as could be desired, and about the same stock left, it being extremely difficult to increase the breeding-stock, so scarce had rabbits become outside the warren on the farms.

The third year the same course was pursued, the same number of good live rabbits netted up; and this year—the fourth year—we have had more rabbits than before, and have also had about 150 cattle "agistors" in for over six

Digitized by Google

weeks, to help to eat the rough grass down, at 2s. 6d. per week, while at this date, October 15, there is still plenty of feed. When I say 3000 rabbits were netted up on each of the three years, I mean on the average; but in each year the number was only a few under or above 3000. This year—the fourth year — about 2000 have been taken out, and 1000 or more are there to be caught for the November shooting. The above record speaks for itself; but even putting the cattle to one side, realising in cash about £100 for eatage, and putting the seventy-seven acres down to rabbits exclusively, it still gives close upon fifty good rabbits per acre, which is a paying figure, and far in excess of anything on record, or thought possible by many. In my own mind I have no doubt of 100 rabbits

Digitized by Google

per acre being a moderate estimate; but to be still more sure, we have during the past two years tested the matter on an odd corner of the warren —the first year on three-quarters of an acre, increased the second year to a whole acre—with results corroborative of the experiment over the whole warren. In the three-quarter acre piece (enclosed to that extent because there was a thoroughfare in the way) we placed in the artificial burrow about eighteen bucks and does, but mostly does. Of that number six were afterwards destroyed in spring, by a stoat or cat: I unfortunately did not take notice whether these were bucks or does. However, the gate was permanently shut and locked, and, except during the very severe weather in winter, no artificial food was given. In October 1891,

Digitized by Google

all were caught and counted over the fence, to the number of seventy-three, —all nice rabbits, worth 1s. 2d. and 1s. 3d. each to us. This was the production of three-quarters of an acre, and plenty of food existed when the rabbits were counted out. In January the gate was again closed, with about twenty bucks and does inside: the ground was gas-limed in November and salted in April, by which means it was soon as sweet and clean as if rabbits had never been in it. As the whole object of this experiment was to find how many rabbits an acre would, *not breed*, but *feed*, we determined to fill it up, as soon as we could get young rabbits, instead of waiting for them to be bred during the season; and with this object, as soon as young rabbits could be found at the nibbling stage, we

Digitized by Google

dug out a number of clutches, with the mothers, and put them into the three-quarter acre. No artificial food was given, and this addition soon told a tale on the grass, so that by July we considered it advisable to add the eke to the ground, making the piece up to just one acre. This more than sufficed. During the summer evenings as many as eighty rabbits or more could be counted out feeding at one time, and in October last ninety-four were netted up, and fifteen counted inside afterwards, so that the acre fed at least 110 rabbits to a good saleable size.[1] When these were caught alive by the trap-fence in broad daylight, several gentlemen were present who were in-

[1] A week after the above date, over twenty rabbits were counted inside at one time, and they were probably not all out then.

Digitized by Google

terested in the subject, and the good size, weight, and condition of the rabbits were the subject of special remark. This small patch has cost more in proportion by a good deal than the rest of the warren; but about 30s. each year for lime, manure, hay, and corn in winter, labour, and five per cent interest on the permanent fixtures, such as the fence and artificial burrow, would cover all,—and I have no doubt I could repeat the experiment successfully year after year under similar conditions. The rent, rates, and taxes of the acre would come to 34s., — a much higher value than can be got for as good, or better, land in many parts in these days. This brings the total expenses, including rent, &c., up to £3, 4s. The rabbits, hand-killed and sold in a business way, would certainly have fetched

Digitized by Google

2s. 4d. per couple, or £6, 8s. 4d. for the 110, leaving a balance of £3, 4s. 4d., including the value of the few rabbits left to breed. I do not, however, profess to give a debtor and creditor account for the guidance of any one, as I do not think that can be done. All I wish is to give the reader as fair an idea as I can of the number of rabbits which he can raise to an acre of fair pasture well maintained.[1] The rest he must reckon according to values in his own locality, and the price to be got for the rabbits. One thing appears certain, however, and that is, that if a profit cannot be made from rabbit-warrens, there is certainly *no excuse for losing by them.* I should like to state

[1] The introduction of the strange clutches to this acre-piece seemed to check the breeding of the stock already in—probably owing to crowding in the small artificial burrow provided.

Digitized by Google

here that the main warren has not cost anything like so much per acre as the experimental acre. Nothing but gas-lime and salt has yet been applied, and that only to a portion of the land. Exclusive of the original cost of the fence, probably 6s. per acre would cover the annual outlay. The attention required by the rabbits during summer is next to nothing. Among the encroachments on the ground, not to mention cattle, are the pheasants — ten acres or more during the past season having been netted in for the coops, tended by men night and day, thus driving the rabbits clean away from a large tract of the best ground.

Reverting to cattle in warrens, it was estimated that the 150 cattle grazed in the warren during the past season ate or destroyed during some seven weeks

Digitized by Google

as much herbage as would have fed another 6000 rabbits, reckoning that each bullock consumed as much as would have supported fifty rabbits—proportionally not a high estimate. I do not, however, approve of turning cattle into rabbit-warrens, as what the cattle eat the rabbits could eat to better purpose, stock being sufficient. The popular idea that the land is improved by pasturing cattle during the summer is a delusion.

Of course, rabbit-farmers who aim at producing an extra good sample may feed with any spare garden-produce they may have, or with a little corn; and in some instances it would pay to do that, but on well-managed land it is not needful to feed.

Digitized by Google

CHAPTER VII.

HOW RABBITS FEED.

THIS is a subject closely connected with that discussed in the last chapter. The way to raise most rabbits to the acre is to make them eat all the grass as fast as it grows, and they will not do that unless put to it in the right way. Rabbits are far more economical and closer feeders than cattle or sheep, and, in proportion, will convert more food into meat from a given space than the latter. Experienced farmers admit that rabbits "take most out of the ground," and

Digitized by Google

the difference must go on to their backs. From careful examination of the pasture I have no doubt on this point, and it is an important one. Cattle and sheep destroy as much as they eat by wandering about the field. The rabbit will go a long way to a turnip-field or a young plantation in winter, when snow is on the ground, and there is hardly any limit to the variety of its diet in the field or garden, when pressed for food; but a good natural pasture will supply all its wants fully, and on such alone it will thrive and fatten for many years in succession. When confined to a warren by a good fence, it soon gets accustomed to the boundaries, and ceases to wander far from its burrow. In a poor warren, where food is scarce, the rabbits are forced to feed almost day and night to get a meal; but where food is plentiful,

Digitized by Google

they feed most freely latish in the afternoon, evening, and during the night—more rabbits being seen just about dusk than at any other time of the day. In the morning and forenoon they retire to their burrows to rest, or they play and bask in the sun in the field. Before a storm of rain, in summer, they feed voraciously, and I have seen more rabbits out at such a time than at any other. In feeding they eat slowly forward from the edge of the covert or burrow, going over the same ground every day; hence in the vicinity of burrows the pasture, if not manured, soon becomes impoverished. It is this close habit of feeding that has caused so much destruction to farm crops in times past, as wherever rabbits abound they eat the young corn close down to the root as fast as it grows, and will clear one side

Digitized by Google

of a field near a covert completely, while hardly encroaching on the other, unless the field be narrow. In warrens no artificial feeding is at all necessary for rabbits, so long as grass is to be had; and it is this fact, coupled with the extremely little care which they require at any time, compared to farm stock, that tends to make rabbit-farming easy and remunerative. As a rule, in good well-sustained pasture, grass is to be had more or less all the year round, and it is only when snow lies long that a little hay, turnips, or corn is needed; and it pays well to give with an ungrudging hand, in order to keep up the vitality of the stock left to breed.

It is this close habit of feeding near home that the rabbit-farmer has to mind, and provide against by stocking the warren to its fullest capacity, and

Digitized by Google

so distributing the burrows, natural or artificial, over the field, that the rabbits will be forced to eat the grass regularly down. No burrow should be so far from the next one that the tenants will be long in meeting; and unless the pasture be eaten fairly bare and close, the stock is insufficient. It must not be forgotten, however, that a flush of grass may come before there are rabbits to eat it, for it is not till the first clutches of young ones are fairly afield on their own account that the grass begins to go down; but the main feeding period need not extend later than October, by which time the biggest and best of the rabbits should be disposed of. A few months embraces the whole feeding period, and this, among other things, simplifies the rabbit-farmer's work greatly, and decreases his risks. After November,

Digitized by Google

severe weather may cause the rabbits to run off in condition. If I had to start a warren on fresh land, I would *overstock it* with breeding-stock to begin with, to make sure of having all the grass that grew converted into rabbits, as it is easy to kill off the largest and best and sell them, if it should be found that there are too many on the ground.

Digitized by Google

CHAPTER VIII.

STOCK REQUIRED FOR BREEDING PURPOSES PER ACRE.

THE number of rabbits required for this purpose depends upon circumstances of climate and situation; but it may be stated that, as a rule, the farther south the warren is situated, and the warmer the situation, the fewer will be the stock needed. I am told by a gentleman, the owner of a warren in Gloucestershire, that his rabbits begin to produce freely in February,—hence each doe there will produce at least one or more clutches

Digitized by Google

more in the season than it would do farther north in a warren like ours, where the rabbits seldom appear in quantity till May and June. I would recommend not less than ten or fifteen does and four or five bucks to the acre in cold localities, and fewer where the season is early; but this is a question the rabbit-farmer will be able to determine for himself after the first year, only it is better to begin with too many than too few, because in warrens, as before stated, no *extraordinary rate of production is to be expected.* Where no estate exists to draw upon, stocking a warren is one of the most expensive items connected with it. The cheapest way is to procure a number of young wild does and one or two bucks, and house them in some comfortable temporary structure open to the south, not very large, and

Digitized by Google

divided into compartments about a yard wide, into each of which one doe should be put, with sufficient hay or straw to make a nest in. Here, if the buck is put to them as they kindle, they will begin to breed in February and produce often, so that if the young are removed to a larger enclosure as soon as they can feed, a considerable number will be produced before midsummer; and when the grass is abundant, these young ones may be turned into the warren to find for themselves. I have tried this plan. The protection and attention afforded, not to speak of good food, promotes rapid production, and a large warren may soon be stocked from a few does. At any time, indeed, the stock may be supplemented in this way. Full-grown rabbits for stock will cost at least 2s. each.

Digitized by Google

CHAPTER IX.

HOW TO LAY OUT A WARREN.

Extent and Situation.—A rabbit-warren may range in extent, on the plan advocated here, from one acre to one thousand acres; only, the larger they are, within reasonable limits, the easier they can be managed and at the least expense. As regards situation, the drier and warmer it is, and the more exposed to the sun, the greater will be the success. The earliest clutches are always produced in the warmest spots; while the breeding season is lengthened, and the grass

Digitized by Google

grows earlier, under such circumstances. When I say the soil should be dry, I do not mean a soil that is soon likely to become parched in dry weather. Good soil is to be preferred. I would much rather face a hard winter with a rabbit-warren than a dry summer, such as we have at long intervals in this country. Then feeding would be a necessity, and it would mean money. With these exceptions, a warren may be made almost anywhere where food exists, for the rabbit will live on very exposed situations. A wood is by no means necessary in or near a rabbit-warren, and I would rather be without such an adjunct myself. I have come to this conclusion since we enclosed the warren here. Woods either contain no grass, like ours, or it is not of the right sort, and they harbour all sorts of vermin; but

Digitized by Google

the worst objection to them is that the young rabbits are a long time in finding their way out of the wood to the field where the food is, whereas the field-bred rabbit is on the grass as soon as he first emerges from the burrow, and begins to nibble at once. He gets the sunshine also, which is a great thing, and he grows faster and is better conditioned than his wood-bred neighbour. The more sunny banks and slopes enclosed within the fence the better, as they save making artificial burrows, and can soon be converted into populous colonies of rabbits by boring holes here and there with a narrow spade, so as to give the rabbits a start and a shelter. Stone burrows, made of cairns of stone, I do not like, even when mixed with turf. They get into an insanitary condition, and if opened after long use will re-

Digitized by Google

semble charnel-houses more than anything else. There is nothing like good loam of any quality for burrowing in.

Fencing in the Warren. — Having selected the ground, the next step is to enclose it by a good rabbit-proof fence. Of course fencing is not absolutely necessary; but it is much the best plan, and cheapest in the long-run. High culture of the pasture will keep many rabbits "at home" without enclosing, but they will stray away even under such circumstances; the stock cannot be so well controlled; the rabbits are much more accessible to poachers, and also to foxes, which destroy large numbers, and make a serious inroad upon profits. A wire-netting fence, such as will be immediately described, is a formidable obstruction to poachers, and an

Digitized by Google

almost complete safeguard against foxes, which do not like to jump even a low fence with no top to it to speak of, and surrounded by a barbed wire. This is our experience here, where both poachers and foxes have always been common as well as bold.

The materials for the fence consist of the best galvanised wire-netting, at least 18 inches wide, 1¼-inch mesh, for the bottom of the fence, and ditto for the top of the fence, 2½ feet wide, and 1½-inch mesh. This will give a fence 3 feet high to the top of the netting, allowing a flap turned down inwards at the top and another flap laid flat on the ground at the bottom, each 6 inches broad, and which prevent the rabbits getting over or under. Wire-netting makers say 1½-inch mesh is close enough for rabbits, and so it is for full-grown

Digitized by Google

ones; but for young ones it is too wide, as we have found. Young rabbits can easily get their heads through a 1½-inch mesh, and their heads once through, they will soon get their bodies through. The other materials required are No. 4 seven-ply galvanised strand wire, to bind the fence; annealed wire, for the top flap; galvanised staples, to nail the netting, &c., to the wooden posts; tying-wire, to tie; and bolts, to hold the flap up. A good fence of these materials any of the fence manufacturers will erect complete for from about 2s. to 2s. 6d. per yard, according to the materials; but the materials can be bought and put up by home labour for about half that amount. The wire-netting and other galvanised materials, &c., are usually sold in rolls by the hundredweight or in quantity, so that to give a fairly

Digitized by Google

accurate cost of the fence, I here furnish about the exact cost of the materials for 50 yards of fencing, subject to the fluctuation of prices of netting, which never vary greatly. I quote from the lists of one of the largest and best firms :—

One 50-yard roll 1¼-inch wire-netting, 18 inches wide, extra strong, 16 gauge	£0	11	6
One 50-yard roll ditto, 1½-inch mesh, 2½ feet wide, extra strong, 16 gauge	0	14	5
Galvanised netting staples, ¾-inch, 300	0	0	7
Galvanised tying-wire . . .	0	0	3
50 yards No. 4 seven-ply galvanised strand wire, at 18s. per cwt. of 300 yards	0	3	0
50 yards four-pointed barbed wire, at 18s. per cwt. of 450 yards . .	0	2	0
50 yards solid annealed wire, No. 4 .	0	1	0
50 galvanised iron bolts, 7½ inches long, with eye to thread annealed wire through, to hold up top flap .	0	2	6
Carried over . .	£1	15	3

Digitized by Google

Brought forward . .	£1	15	3
50 riven or sawn pointed oak or larch posts, 5½ feet long, charred at bottom	0	6	0
Cost of erecting 50 yards . . .	0	6	0
Carriage of materials and incidental expenses	0	2	0
	£2	9	3

The above cost of 50 yards complete comes to about 1s. per yard, and the prices are either from the priced circulars or from our own bills for materials supplied for the warren here. The wooden posts, 3 to 4 inches square on the average, or thereabout, do not look so neat as iron stays; but they are cheaper, just about as enduring, and make a much stronger fence, as, being thicker, they have a firmer hold of the ground. Such a fence is thoroughly cattle-proof when erected firmly and well. Those who object to the barbed

Digitized by Google

wire may use strand wire instead; but the barbed wire, put on as to be now directed, will turn a fox and prevent cattle rubbing against the fence. A couple of ordinary labourers can easily and quickly erect a fence of this kind, and prepare all the posts, &c. For the latter we use the oak poles thinned out of the plantations. One man will saw into lengths, rive with iron wedges and a mallet, and char at the pointed end about one hundred per day, which cost us about 10s., including haulage and the price of the wood.

Erecting the Fence.—First set out the line of the fence that is to enclose the warren, and have as few bends and angles as possible, as these only increase the cost. The gateways should also be few in number, and should be

Digitized by Google

hung so that they will securely shut and fasten of their own accord. The construction of the fence will be readily understood by referring to fig. 1.

Having set the fence line and the gateways out, begin by driving in the posts, 1 yard apart and 18 inches deep, and complete this part of the work before attaching the netting. This will leave the posts standing 4 feet high. Next run on the No. 4 strand wire 9 inches from the top of the posts, straining it tight, and nailing it firmly to every post by a galvanised $\frac{3}{4}$-inch staple; or 50 or 100 yards may be strained tightly in position at one time and nailed to afterwards. Every staple driven relieves the strain, and when all are driven the wire is tight, and there is no great strain anywhere. This wire rope will hold the posts in position.

Digitized by Google

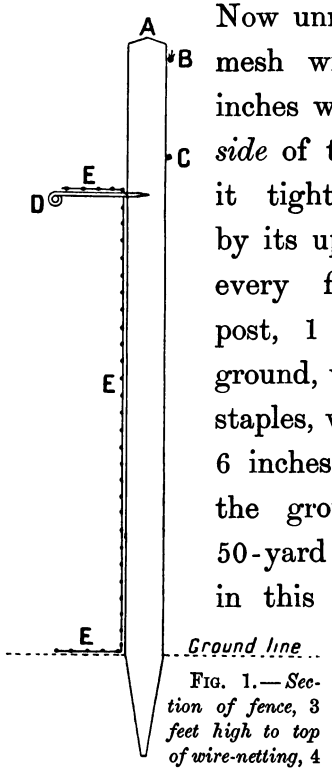


FIG. 1.—*Section of fence, 3 feet high to top of wire-netting, 4 feet to top of post.*

A, oak post; B, barbed wire; C, strand wire; D, bolt to hold top flap, showing eye for annealed wire; E E E, wire-netting turned in top and bottom.

Now unroll the $1\frac{1}{4}$-inch mesh wire-netting, 18 inches wide, on the *inside* of the posts; pull it tight, and nail it by its upper selvage to every fifth or sixth post, 1 foot from the ground, with the $\frac{3}{4}$-inch staples, which will leave 6 inches to lie flat on the ground. Do one 50-yard roll at a time in this way, and proceed till the whole of $1\frac{1}{4}$-inch mesh is thus temporarily fastened. This done, begin at the be-

Digitized by Google

ginning again with the 1½-inch mesh 2½-feet wide netting, and nail it temporarily to the posts *above* the bottom strip, so that its bottom selvage will just overlap the top edge of the latter and no more. Both top and bottom nets being now fastened in this way, proceed to nail to the posts permanently as follows: First drive a galvanised ¾-inch staple into every post where the top and bottom nettings meet at 1 foot from the ground, making each staple to hold both nets at that point, thus saving staples and nailing, and making an equally good job. Next nail the top netting to every post in the same way 6 *inches below* its top selvage, the 6 inches above being left for the top flap. Finish throughout in this way, and both nets will then be sufficiently fastened to the posts to permit of the

Digitized by Google

top and bottom being nailed tight. Now press the bottom net close into the posts at the ground with the foot or a board; and as it was nailed 1 foot from the ground at its top edge, there will be 6 inches to spare for the flap to lie on the ground, and it will lie flat by its own rigidity.[1] Then drive a staple into each post close to the ground, at the angle formed by the flap; drive at the same time another staple in half-way between the two upper rows, which will make four

[1] The history of the turned-in bottom "flap," which has revolutionised rabbit-fencing, is as follows: Very recently it was described by a writer with great circumstantiality as "new," and a manufacturer of rabbit-fences has recently claimed the flap as the invention of his firm; but neither had any claim to it. Formerly the wire-netting used to be sunk in the ground edge-ways, or a stone foundation was put under the netting to keep the rabbits from burrowing through—both expensive and quite ineffectual methods. Some fifteen years ago, or perhaps more, the present Earl of Wemyss, when Lord Elcho, drew attention to the flap system,

Digitized by Google

rows of staples altogether within the height of three feet, which will be enough. Have now the 7½-inch bolts to hold the band of annealed wire. Drive them into the posts in a line with the top row of staples, or 6 inches from the top selvage of the top net. Having seen that the eyes for the annealed wire going through are in the right position, run the annealed wire through the eyes of the staples, fasten the wire securely to gate-posts or stout stays at intervals of 400 or 500 yards, connect the wire

incidentally, in the House of Commons, as having been successfully adopted in Australia. Foresters and gardeners at once realised its advantages, and it has been adopted and recommended by them ever since. It was drawn attention to by the present writer in the 'Field' or 'Garden,' or both, soon after Lord Elcho's reference to the subject. The idea of the flap is based upon the fact that the rabbit always goes up close to a fence to scrape, and consequently gets always on to the flap on the ground, which stops its progress.

Digitized by Google

between these points at distances of from 50 to 100 yards, as may be expedient, by *raidisseurs* supplied with the wire, and wind up as tight as a drum. Then press down the top flap to the annealed wire, and tie to with the tying-wire. Lastly, fasten on the barbed wire two inches from the top of the posts by staples, in the same way as the strand wire, and the work is finished. This makes a good and cheap fence; but if it is desired stronger, the posts may be driven two feet apart only, and two strands of No. 4 wire may be twisted together and used instead of one. About 1½d. per yard will cover this extra.

Fig. 1 shows a section of the fence complete. As has been stated, the object of the top and bottom flaps is to prevent the rabbits from getting over or under the fence. The object

Digitized by Google

of putting the narrowest meshed wire-netting at the bottom is to prevent the rabbits getting through when young and small, and we find if this is a foot high it is effectual.

Artificial Burrows. — Whether the rabbits are to be raised for sport or for the market, the earth-mounds for the rabbits to breed in, and natural sunny banks where they exist, must be laid out with some degree of order, so as to facilitate shooting operations, and to make the catching up of the rabbits in large numbers easy and convenient. In the warren here, and others, the string net and the spade and ferret have been superseded by the trap-fence—first set up by myself, I believe, about four years ago, and a contrivance that saves much labour and expense.

Digitized by Google

To use this fence, however, the rabbits must conform to some sort of discipline, which is easily managed in arranging the burrowing-places. Burrowing here and there and everywhere all over the pasture must be checked, and burrowing in flat ground stopped altogether, and both may be done by the person in charge blocking the holes up with his foot as he finds them. Burrows in flat ground are the cause of serious loss, as during heavy and sudden rains the holes become reservoirs into which the water quickly drains and drowns the young rabbits. In an old warren near here, which is level, and where the rabbits are forced to burrow on the flat surface, never a year passes without serious loss from drowning. Two years in succession it was reckoned that nearly the whole of the first brood

Digitized by Google

was lost. The rains that do most damage are those heavy and cold rain-storms from the north-east, often lasting steadily for twenty-four hours or longer, which occur annually between April and July. After a storm of this kind, I have walked across the old warren mentioned and found every burrow full of water, and numbers of very young rabbits floated out at the mouths of the holes. In our new warren such a thing cannot possibly happen, the earth-mounds being above the ground-line.

And now as to laying out the burrows. First, the dry sunny banks should be utilised, and if colonies are not already established in these, holes should be made a few yards apart, by boring into the bank horizontally with a long planter's spade to the distance of a

Digitized by Google

yard, or at least out of arm's-length. The rabbits will do the rest. Where there are no natural burrows of this kind, artificial mounds must be thrown up in parallel lines about 100 yards apart. These are easily and quickly made, and will cost about 9d. per cubic yard to throw up. They may be about 4 yards wide, and about 3 feet above the ground-line at the apex. The labourer should proceed thus in making them: Set out a circular piece of ground 4 yards wide, and a ring 1 yard wide or more round that. This will take up a circle 6 yards across altogether. Dig the soil out of the outer ring, and throw it as roughly as possible into the 4-yard space in the centre, forming a conical heap. The first spits of sod should be thrown loosely together, in as big lumps as possible, and, about every

Digitized by Google

yard or so, access should be provided to the centre of the mound by holes, formed by placing the first sods together so—Λ. Above this the earth should be piled loosely, till the desired height is obtained. The rabbits will afterwards excavate the heaps to their own satisfaction, but it is important to have them so made that the rabbits can find shelter in them at once; and when they are put into the warren, they should be put *into the burrows* on arrival. Strange rabbits, if put down in the open, will wander round the outskirts at the fence, and lie and sulk for long enough before they find a burrow, whereas when put into the burrows they stick to them, and are sooner at home. When a mound is finished, it should slope with a curve to the bottom of the trench out of

Digitized by Google

which the soil has been dug, where it will be about five yards in diameter. Should the soil or subsoil be of such a nature as to cause the rain-water and drainings from the heap to stand in the trench, grips or drains should be made to the nearest field-drain or outlet, to let the water off. The object of having these mounds of moderate size and about 100 yards apart is to ensure the rabbits cropping the pasture regularly in every part, from beginning to end of the season, and a greater distance than 100 yards apart is not desirable, as experience will soon prove. Besides, *rabbits breed best in small colonies.* If there be objections to the mounds being so close, they may be put wider apart, but they must be proportionately larger. Two good men will throw the heaps up in a very short time, and

Digitized by Google

should the ground come to be used for any other purpose, they can be quickly levelled down again. Branches of trees, brushwood, bracken, or any rough refuse, may be thrown over the heaps or in the trench, and will help to provide shelter, but such additions are not a necessity. The success of the warren, however, depends on the burrows, whatever they are like, being distributed over the pasture in a regular manner. If this be attended to, and the burrows be not too far asunder, the rabbits will eat all the grass and be proportionally prolific: loss is certain otherwise. Our experimental acre here presents quite a different aspect to the rest of the warren. But even in this small space the rabbits keep nibbling close to the artificial burrow in the centre of the acre till the

Digitized by Google

ground is almost bare, leaving the outside to the last.[1]

[1] It has been suggested by a gentleman that a warren, in order to keep the ground in a healthy condition, should be arranged in divisions, to be used alternately by the rabbits. There are no objections to this plan except the expense, and the object of it is attained if the directions given for the care of the pasture, &c., be observed. The division system complicates the management, also, which is undesirable, and it must be remembered that rabbits cannot be as easily driven out of one field into another as a flock of sheep. The one-field system is the easiest and least expensive, and I doubt if the division system would pay its own cost.

Digitized by Google

CHAPTER X.

THE WORTLEY RABBIT-TRAP-FENCE AND ITS ADVANTAGES.

I HAVE given plans and descriptions of this fence to a number of noblemen and gentlemen; but, so far as I can learn, it was first used at Wortley by me. The general plan hitherto of keepers, when rabbits have had to be caught alive, has been to use string-nets during the darkness, assisted by a number of men to drive the rabbits into and take them out of the nets. This is a very barbarous as well as an expensive method, and

Digitized by Google

after we had enclosed our warren I tested the trap-fence, with my employer's permission and approval, and since that time it has been in regular use on an extensive scale, and quite meets the approval of our head-keeper and his men, as it saves much night-labour. With the string-net many rabbits are killed and injured, and it is quite a common thing to find your hands wet with the milk from the poor does that happen to be suckling young,—for in the dark bucks and does have to be summed up indiscriminately. It is otherwise with the *trap-fence*, which can and should be worked by daylight, when the men can see what they are doing, and the sexes can be sorted out leisurely without injury. The trap-fence can be used anywhere against covert or burrow. Supposing you have a wood adjoining

Digitized by Google

a grass-field where the rabbits come out to feed, proceed thus: Get a roll or rolls of wire-netting as long as the covert to be worked. Roll the netting out flat on the grass 50 or 100 yards, as may be needful, from the wood. Rear it up on edge, bottom edge close to the ground, and support it for its whole length with stout stakes. It does not matter about it being tight, as the structure is temporary, and may have to be shifted elsewhere next day. Get another equal quantity of wire-netting and set it up in exactly the same way—parallel to the other, as close to the wood as possible; but instead of letting the edge of the netting touch the ground, tack it to the stakes 6 or 8 inches from the ground. This leaves a continuous opening along the bottom of the netting for the rabbits to get through to the space between

Digitized by Google

the two nets. In tacking this inner net to the stakes, see that the tacks or staples are driven in 4 or 5 inches above the bottom edge, the object of which will be immediately explained. Get now a strip of wire-netting about 18 inches wide; roll it out, and shove the upper edge up *under* the *unfastened* edge of the inner fence just described, and tack it or tie it where it meets the tacks that hold the bottom of the upper net. When this has been done, the 18-inch strip which is to form the "trap" will project stiffly in a sloping direction from the bottom of the stakes, and lie close to the ground. It is the overlapping flange under which the top edge of the 18-inch strap is inserted that causes the trap to clap to the ground tight. The trap is now ready for setting. To do this, get some pieces

Digitized by Google

of stick about 15 inches long, and prop up the trap-flap about every 20 feet, setting the bottom ends of the sticks on pieces of slate or flat stone to make them slip easily. Run now a common galvanised wire the whole length of the fence close to the sticks, to which attach it securely. Have one end of this wire run out to a spot some distance off, where a man can see, or be signalled to, to draw the wire. This may be done, say, about noon; and later in the afternoon, when the rabbits have come out to feed, they find they can get under the first net but not past the second, and as soon as a sufficient number is in, the man pulls the wire, when down goes the trap, and all the lot are enclosed. Of course, it will be understood that the two parallel nets meet at each end, where separate recesses may be made for the

Digitized by Google

rabbits to crowd into, which they will do quickly if driven gently to the ends of the enclosure. Here they can be picked up, killed, or sorted out as desired. On one occasion here, when 500 rabbits were caught in a short time, they packed so deeply in one corner that sixty were smothered before they could be boxed. This can, however, be easily avoided. The simple diagram opposite will show how the trap-fence is set up and worked.

In the Wortley warren, we can, if we like, work 1000 yards of trap-fence from a hut in the middle, from which the wire can be pulled or let down both ways. The trap can be worked round corners for a long distance by means of pulleys, as is done on the estate of G. H. Remington Wilson, Esq., Broomhead Hall, where on shooting-days the rabbits are

Digitized by Google

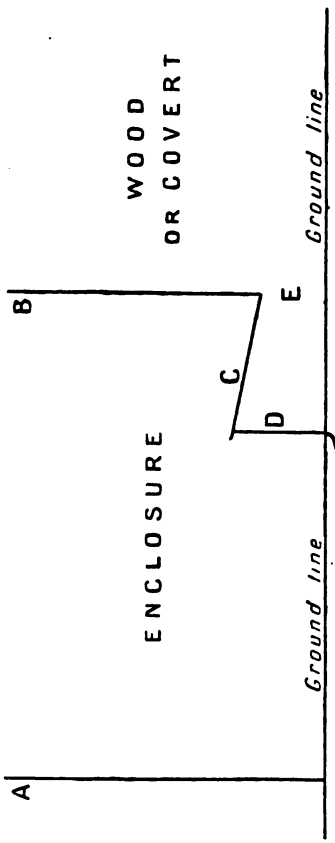


FIG. 2.—A, outer fence; B, trap-fence; C, drop-flap; D, prop to flap; E, entrance from wood for rabbits; F, wire attached to props, carried out of sight.

Digitized by Google

now shut out from the wood into the field by the trap-fence.

In a warren laid out in regular burrows, of course the trap-fence must be set up against a whole line at once, as may be found convenient. We have often almost cleared one of our long soil-ridges in one afternoon at one pull.

Digitized by Google

CHAPTER XI.

CARE AND CULTURE OF THE PASTURE IN RABBIT-WARRENS.

THIS subject has been referred to before, as that part of the management almost always overlooked by owners of rabbit-warrens and writers. The late Professor Lindley, the eminent plant physiologist, wrote that many years ago "the pastures of Cheshire, exhausted by continual removal of grass by the animals that grazed upon them, recover their fertility when dressed with bones." Now this exhaustion is exactly

Digitized by Google

what takes place in rabbit-warrens from which large numbers of rabbits are removed annually and no bones or other manure ever put back in return. The Cheshire dairymen were quite right in concluding, in their common-sense way, that in putting bones on their pastures they would be putting back what their cattle took out of them; but, as Dr Lindley showed, it was the combination of phosphoric acid and lime *in the bones*, otherwise *phosphate of lime*, of which *the bones of animals are mainly formed*, that restored the fertility of the pastures. "Hence arose the manufacture of superphosphate of lime by Mr Lawes, now so indispensable to cultivators."

What the rabbit-warren farmer needs to realise is that the flesh, bones, and blood of a rabbit consist of from 55 to

Digitized by Google

60 per cent of phosphate of lime; that the pasture on which it feeds consists in large part of the same elements; that the rabbit gets its nourishment, &c., out of the *grass* that it eats; that the grass gets the phosphates out of the *soil;* and that when the soil becomes exhausted of these, both pasture and rabbits must of course perish.

This is the secret of the whole matter. The authority on rabbits referred to in previous chapters evidently knows that rabbits in neglected warrens deteriorate in size and condition; but of the real cause — deterioration of the soil — he seems never to have guessed, for remedial measures are not so much as alluded to. "New blood," he insists, must be introduced often and at all hazards under such circumstances; which is just about as reasonable as proposing

Digitized by Google

to stop a famine among human beings by increasing the population by the introduction of a number of healthy people among the starving, without increasing the supply of food. The two cases are exactly parallel. New blood is very expensive, and is by no means so important as some imagine. Of course, it is not needful to supply bones direct to rabbit-warrens in all circumstances. In very many cases warrens are laid out on old pasture, where the food exists if only it were unlocked. We have applied no bones or phosphates yet, but only gas-lime and salt; but we had a thickly matted old pasture full of fibre, humus, rabbit-droppings, &c., to begin with, and which will take a good deal of decomposing and converting into plant-food. Much of the pasture near the wood, where most rabbits were, was

Digitized by Google

also what would be called tainted or rabbit-sick—that is, it was full of the accumulated droppings, &c., of the rabbits, only partly decomposed, or not decomposed at all. This of course indicated lime, and as gas-lime is just as good for grass as fresh lime, if not better, it was used pretty freely on the worst spots—put on in November, the right time—followed by a sprinkling of salt in spring. The lime acts upon the droppings and humus of the turf, converting both into the food of plants, aided by the salt; and both are energetic purifiers of the ground even on a limestone soil, which ours is not. The effect was at once apparent, by the improvement in the pasture and the eagerness with which the dressed parts were attacked by the rabbits. As the results of dressings of this kind in a warren

Digitized by Google

are always most telling in the season when they are applied, and have most efficacy in decomposing the constantly accumulating rabbit-droppings, I decided not to put on heavy dressings to last a series of years, but to sprinkle every year, and put proportionately less on, and the same with the salt. The effect upon the rabbits has been plain enough, for they have been strong, lively, and exceptionally free from disease. The salt, as is well known, has a marked influence on the health of animals, and promotes fertility. So noticeable was this, that a large quantity of gas-lime and salt was also applied to the old deer-park with the same results, the deer patronising the dressed land the whole summer. The prejudice against gas-lime—a prejudice entertained even by some noted and professedly scientific

Digitized by Google

agriculturists — arises from ignorance. Dr Voelcker, chemist to the Royal Agricultural Society, has pronounced emphatically in its favour, and especially recommends it for permanent pasture deficient in lime. But more is to be said about it than this. Gas-lime is supposed to be obnoxious to animals on account of its smell; but that is not the case with cattle, horses, or rabbits. Gas-tar will stink rabbits out of their holes, and is used for that purpose; but gas-lime they will burrow in, and will live and breed in a fresh heap of it, as they have done here. They simply revel in it, and are on to it as soon as it is spread. Horses I have seen rubbing their noses in it with apparent pleasure, and cattle have no objections whatever to its presence. We buy it here at 1s. to 1s. 6d. per ton

Digitized by Google

at the Sheffield Gas-Works. It should be well pulverised with a mallet or spade, and spread evenly on the pasture, but should never be applied after the tender grass begins to grow in spring, as it burns it off. Salt should be given freely to almost all pastures, especially when far from the sea. "The effects of salt," says Dr Lindley, "are not to force plants and give them a dark colour like ammonia, but to consolidate their tissues and render them crisp as well as succulent," and no doubt more nourishing.

A thing happened here during the past summer worth mentioning in connection with this subject. As in most places, the young pheasants here have suffered more or less from cramp, that disease never being quite absent at any time till this year, when the coops were

Digitized by Google

put down in the warren on a spot recently limed and salted. Last year on the same ground, close by, where no salt or lime had ever been put, cramp was bad; this year it was wholly absent, and similar dressings will be given where the pheasants are to be in future. I merely offer this hint to those whom it may concern.

As regards other manures for warren-pasture, any manure will answer that may be readily procurable, provided it is of a kind to nourish the pasture; but at any rate, for every pound of rabbit-meat taken out of the warren its equivalent in some form, and rather more, must be put back every year, and the salt and lime must not be forgotten. Rough pasture may also be burned with great advantage; but that will not be needed if the stock of rabbits be

Digitized by Google

sufficient to eat the grass as close as it should be eaten.

In old warrens where much furze, heath, bracken, or other unprofitable growth exists, an estimate should be made of the number of rabbits desired; and that done, all the rough growth not needed for cover should be burned off and kept down, in order to increase the food-supply. As often as otherwise there is far more cover than pasture, and far more than is needed for sport or any other purpose. In many such warrens the number of rabbits might be at once more than doubled or trebled by a little judicious care in the way indicated, always provided that lime, salt, or other manure is also given.

Digitized by Google

CHAPTER XII.

ENEMIES OF THE RABBIT, DISEASES, ETC.

THE enemies of the rabbit are poachers, foxes, stoats and weasels, cats, rats, owls, and hawks. The four first named are the worst. Rats are not troublesome unless Indian corn be scattered about, and hawks and owls confine their depredations to the very smallest rabbits.

Poachers.—If anything is likely to destroy the rabbit-poacher's occupation, it is the warren system as here practised. The poacher likes to see rabbits

Digitized by Google

in every covert, coppice, and clump of bushes. His attention, when at work, is about equally divided between the keepers and the rabbits. He knows the former cannot be in two places at once, and he works accordingly; but a warren, however large, is much more easily overlooked and guarded, and although the haul be tempting, the risk of the police court is about an even balance. The barbed wire is also a formidable obstacle; and alarm-guns, which are readily put down, provoke the poacher to wrath. He pretends he can find in the dark the slender copper wire attached to the guns, by means of a plummet which he carries before him, and snip it; but he has seldom time to take so much trouble,—and besides, a clever keeper can set the gun to go off both ways. Wortley is in

Digitized by Google

the centre of one of the worst poached districts in England, and our warren is probably the most tempting spot within a large area; but up till now there has been no trouble with poachers. Outside the warren there are no rabbits for them to catch. It is netting by poachers that is most to be feared, as they make big hauls in that way. Keepers strew branches of trees near the coverts to prevent netting; but in a good pasture this is a very objectionable practice, as thistles and weeds are almost sure to spring up on such spots, and cannot be easily eradicated. Barbed wire run out from the covert in parallel lines, twelve inches from the ground, answers the same purpose far better, only it cannot be used where cattle are pastured. If sticks must be used, it is just as easy as not to strew

Digitized by Google

them in regular lines instead of scattering them all over the grass, and it answers quite as well. Against poachers generally, vigilance must be exercised by every means known to keepers; but in a warren, with the aid of alarm-guns, they need not be greatly feared.

Foxes.—These are very destructive in rabbit-warrens. I have seen ten recently killed rabbits laid at the mouth of a fox-hole where a vixen had cubs. Here, however, foxes are rarely seen or traced in the warren, but are often observed just outside the fence among the pheasants. A wire fence is at all times apparently shunned by a fox, and when it is surmounted by a "thick-set" barbed wire, it seems to be practically "a settler." If the wire is so put on that the fox can only get in by going over it, he may try it once but hardly twice.

Digitized by Google

He must make a clear bound to get over the fence without hurt; but a fox always jumps on to the fence first, and I have seen him stand on the wall of a plantation and take a long survey before descending on the field side. Here we cannot say foxes have done us any harm, but in an old warren surrounded by a stone fence they are very destructive.

Weasels and Stoats, when they abound, are also destructive; but they are easily kept down by trapping and shooting, and it pays to reward keepers at so much a-head. They should be particularly watched about the burrow-heaps and old walls, where they are likely to breed.

Cats are very destructive also, and make much longer journeys to a rabbit-warren than is imagined. I have known cats travel more than a mile, and have

Digitized by Google

a regular spot for getting over the fence at a gate-post. Indiscriminate destruction whenever found among the game, and a fair price per tail to the keeper, will keep the cats scarce, and make their owners look after them at the same time.

Diseases of the Rabbit. — The only disease that I am familiar with in the rabbit is what is commonly called "pot-belly"—a disorder which seems to attack young rabbits more than old. The liver is always affected in such cases, and spotted. The disease, I believe, really originates in the liver. It is worst when the young grass is abundant and soft; but it is not caused by over-stocking, for I have seen more pot-bellied rabbits outside the warren than inside, and I am driven to believe that

Digitized by Google

the free use of salt and lime has been the preventive. It is apparently produced by the food, and where it is troublesome I would suggest a corrective in the shape of dry hay or corn, and salt and lime to the pasture.

As to disease caused by what keepers call "tainted ground," I have never seen any, nor do I believe in any such specific ailment from such a cause. I have never seen any part of a warren so much tainted by the rabbits as I have seen rabbit-hutches, which soon become permanently offensive in spite of care; yet as long as the rabbits are properly fed in such places, and otherwise attended to, they keep free from disease, provided the ventilation be sufficient. I have been struck by this fact many times, and have in consequence little patience with the "rabbit-sick"

Digitized by Google

theory in warrens which contain wholesome food and are looked after.

Feeding in Winter.—When the weather is open, rabbits require little or no extra food in winter, or at the most a little dry hay, put into low racks and covered above by a strip of tarpaulin to keep it dry. They will eat the hay in this way freely, and they cannot waste it. Spare vegetables from the garden may also be given, such as old cabbage blades and stumps, which are wholesome, also turnips in limited quantities. In severe weather a little Indian corn should be given two or three times a-week, placed under inverted boxes to keep rooks and birds from stealing it, holes being provided at the sides for the rabbits to enter. The vitality of the stock should not be allowed to get low for the sake of a little food, which

Digitized by Google

is one way of warding off disease and promoting early breeding. When snow is deep and threatens to lie, the snow-plough should be run over the warren in every direction: the sun or the rain will then soon melt the thin layer of snow left by the plough, let the rabbits get to a portion of the grass, and keep them from wandering over the snow in search of food. The fences should also be looked round at such times, and any accumulations of snow against the fence removed, to prevent rabbits from escaping; but we do not experience much trouble from this cause.

Digitized by Google

CHAPTER XIII.

A SPECIAL CHAPTER FOR FARMERS.

It has been suggested to me that I might make it easier for farmers, by giving them a few special instructions how to proceed in adding a stock of rabbits to their farm, and raising rabbits for the market. The difficulty with farmers of moderate means and education is to persuade them to attempt any new venture without absolute assurance of success; and an almost equal difficulty is to bring a new subject under their notice. I speak of England chiefly.

Digitized by Google

I do not wish to hurt any one's susceptibilities, but it is a fact that a very large number of farmers do not read agricultural papers, far less books. With the class I speak of, farming traditions are mostly oral, and interchange of opinion on agricultural topics among themselves seldom extends further than the next market-town or village. At such rendezvous you may often meet farmers whose practice is the same to-day as their forefathers' was generations ago. I have met middle-aged farmers, tenants of over 150 acres, who acknowledged that they had never bought an agricultural paper, and never read one except by chance. And they were not exceptional examples, nor were they bad farmers as their class goes. In the villages where newsagents reside, the trade is mainly confined to the sensa-

Digitized by Google

tional local weekly papers, among farmers and their hands who do read, and an agricultural sheet is a comparative rarity. The same apathy causes these farmers to absent themselves from the county council agricultural lectures given in many places now, and attended chiefly by schoolmasters, their assistants, and others not practically connected with farming. With rabbits the case might turn out different, if the subject can be brought before the farmer's mind. He is not ignorant of the value of rabbits, but he knows next to nothing about farming them like sheep and cattle. Notwithstanding their grumbling about rabbits destroying their crops in former times, it is no secret that where it has resulted in the extermination of the rabbits, the Ground Game Act has not been regarded with unqualified

Digitized by Google

approval by farmers, some of whom prefer to have just as many rabbits about the odd corners of their land as they can keep under control; and a good milk-walk forms an excellent opportunity, I know, for disposing of as many couples as they can lay their hands on. In fact, I could not suggest a better arrangement than a dairy and rabbit farm combined, in those districts where farmers hawk their milk round their customers every day, or send it by train. In this way the rabbits could be disposed of readily, and at the best price. Hawkers of vegetables do have a rabbit-rail on their cart; but they have to purchase in towns, hence the rabbits are not always fresh or reasonable in price, yet large numbers are disposed of in that way.

That farmers can raise rabbits prof-

Digitized by Google

itably, and more profitably than any other kind of farm live-stock, as things have been for years back, I have no doubt whatever, provided they try fairly. In fact, the farmer could breed rabbits more economically than his landlord, because he could attend to them better, and look after their wants in a way that a keeper cannot do. Of course, devoting fields to rabbits is a branch of farming that I fear is not covered or provided for in "covenants" between landlord and tenant, and in which shooting rights on either side are involved; but I do not suppose there are any landlords who would refuse to allow their tenants to breed rabbits on reasonable terms, if they were so disposed. That there are farmers who have stolen a march on their neighbours, and who breed rabbits on their land regularly,

Digitized by Google

I have heard, but they are suspiciously reserved on the subject. That any farmer may raise from 50 to 100 rabbits to the acre, worth from 10d. to 1s. 3d. or 1s. 6d. apiece, I feel sure. Last August, when in Dumfriesshire, Scotland, I was assured by a farmer, quite incidentally, that if his agreement allowed him, he could sell every rabbit he could raise more profitably than anything else. I said to him that I was rather interested to hear as much, as he was not near a good market. Nevertheless my friend said his statements were true, — that he sold all his rabbits near home; and, taking me to his farm, he showed me where he got the most of them as they came out of the adjoining coverts on to his land. I was pleased to hear all this, because my experience has been mainly con-

Digitized by Google

fined to England; but I was aware that a large portion of the rabbits sold in England come from Scotland, and from very far north in some instances. Not long since I saw a pile of empty rabbit-boxes, with a well-known Yorkshire game-dealer's name on them, on an estate on the Borders, waiting for the shooting-day just about to come off. The difficulty with farmers who have taken to rabbit-farming is to get the exact truth from them. I know that one farmer in Lincolnshire sends large quantities of dead rabbits to the Sheffield and other markets, and a sportsman who shoots over the ground tells me he farms rabbits almost exclusively.

Farmers in England know perfectly well the value of rabbits; but any methodical attempt to breed on the open pasture for sport or profit has hitherto

Digitized by Google

been impracticable, owing, as before observed, to the shooting conditions of tenancy, and the want of information on the subject. Supposing, however, that a tenant makes an agreement with his landlord on the subject, the experiment may very soon be made by the tenant at extremely little cost and risk. All that is needed for a beginning is a field of several acres (I would recommend ten acres), rabbits to stock it for breeding purposes, and a cheap fence to keep the rabbits in. How to make a cheap yet substantial fence at about 1s. per yard has already been described in a former chapter; but the farmer may construct a considerably cheaper fence even than that, such as will last a number of years, and good enough for experimental purposes. Braby & Co., the great wire-netting makers of London

Digitized by Google

and Glasgow, supply the wire-netting through all ironmongers. What is called "medium" quality, 18-gauge, 48 inches wide, 1¼-inch and 1½-inch mesh, in the proportions described in the chapter on fencing, at about 6d. per yard run, will do, and this may be set up round a 10-acre field in a very short time by a couple of men,—all they have to do being to drive a hedge-stake in every few yards, and rear the netting against the stakes, and fasten with a staple close to the ground and 6 inches from the top, taking care to press the bottom flap down *inwards*, and to turn the top flap slightly down, in which position it will remain permanently by its own rigidity, provided cattle and horses are not turned in: sheep will do no harm. Of course this netting-fence should be erected inside the ordinary

Digitized by Google

field fence or hedge, for it will not serve as a barrier against cattle. This simple fence gets rid of all the other appliances and permanent fixtures mentioned in the regular warren-fence, which I have little doubt the farmer will adopt when he has found it is worth his while to extend his rabbit enclosure. I do not advise any tenant to begin with rabbits unless he does enclose the ground, for the result will be unsatisfactory. As to burrows, they may soon be thrown up artificially, if no natural burrows or banks exist in the field. As the original outlay will be by far the greatest incurred in the venture, the tenant need have less hesitation in making a fair start.

As regards stock to breed, the cheapest way is to get a few wild does and a buck or two, and raise the few required for the purpose, which may be done in a

Digitized by Google

few weeks in any small shed; and if the rabbits are turned into the enclosed field in autumn it will be soon enough, and will permit of the field being used for other purposes up till that season. The following season the stock will begin to breed, and by August, or sooner, the farmer will have the oldest and earliest rabbits fit for the market, and which, hand-killed, should fetch about 2s. 6d. per couple. Shrewd farmers tell me that this price is more per pound than what they have realised for beef or mutton for a long time back, at a cost of production that would not be incurred with rabbits, as has been previously pointed out. The farmer has an advantage which the gamekeeper with the big warren has not. He may greatly increase the weight of his rabbits, in a comparatively small field, with

Digitized by Google

any spare vegetable refuse from the farm or garden, which the rabbits will eat greedily and to their advantage, for they are soon fattened by a little extra food.

As regards attention, rabbits will give him little trouble; and if he keeps his burrows under control and confined to certain spots, so that he can shut the rabbits in or out, he may augment his income by letting the shooting to some sportsman, who will usually be found willing to pay for the sport of shooting the rabbits for him. A ready way of disposal is to sell the rabbits with the sport, — a plan advantageous to both sides, as in that manner the farmer may command the market-price for his rabbits, and pocket a handsome bonus for the shooting also, while it would come in more reasonable for the sportsman.

Digitized by Google

It must be remembered that rabbits form the staple shooting almost everywhere; and as it costs more to breed and keep large numbers of rabbits on for the gun than it does to raise them for the market direct, there are many sportsmen who prefer a day or two's shooting ready provided for them to any other plan, while there are numbers who have no other opportunities of such sport. There is seldom any difficulty in letting shooting. The number of those who rent small shootings is legion, and includes all sorts of tradesmen, merchants, brewers, and many innkeepers.

That a well-stocked 10-acre field will provide a sufficient number of rabbits for several guns for one or two days, to ordinary shots, is well known. In a small warren devoted to rabbits I have known the whole stock of ammunition

Digitized by Google

exhausted by four or five guns before three o'clock, and no remarkable destruction done to the rabbits. The shooting, especially after lunch, is often very "wild," so that, although a few good shots would soon account for one or two thousand rabbits, a promiscuous batch of six or eight sportsmen would perhaps find ample sport for one or even two days among that number.

And now a word of caution to the farmer about the care of the pasture in his rabbit-field. The miserable way the small English farmer often treats his grass-land, where his cows are fed, won't do. I know numbers of farms—in fact, they are common everywhere — where the pasture, naturally deficient in lime, has not received a morsel of lime for twenty or thirty years, and no manure of any kind except a dressing of "muck"

Digitized by Google

from the farmyard, almost always after it has been exposed for months, and become exhausted by fermentation and the weather. The consequence is impoverishment of the pasture. The grass is late in beginning to grow, scant in quantity, and poor in quality. This won't do for rabbits. The pasture must be kept sweet, and in good heart, as directed in the chapter on this subject, or failure more or less will be the result. In rabbit-farming, as in other branches, high farming within reasonable limits pays by far the best. Of course farmyard manure, if spread on early enough, and while it is fresh, makes a good manure for rabbit-pasture, and as the farmer has that often when he has nothing else, he may use it and liberally; but he must not forget lime and salt, in autumn and spring respectively.

Digitized by Google

CHAPTER XIV.

A CHAPTER FOR ALLOTMENT HOLDERS.

THE allotment farmer's facilities for raising rabbits profitably are somewhat the same as the large farmer's. A tenant of two or three acres may devote all or a portion of them to rabbits. He has an advantage which larger holders have not got: his bit of land is more under control, and he may make his cottage-garden a valuable adjunct to his rabbit-fold, because in summer or winter the rabbits will eat and fatten on almost any garden refuse

Digitized by Google

that is green, as the rough outside blades of greens, cabbage, and turnips, on peas and beans, and thinnings of several vegetable crops, such as are usually wasted. In winter, and even when grass can be had, we have seen a load of kail and cabbage stumps eaten up, root and top, in a couple of nights. In the way directed in the preceding chapter, an allotment may be enclosed and stocked with rabbits in a very short while; and if the burrows, whether natural or artificial, be strictly confined to their limits, the tenant, by means of the trap-fence on a small and cheap scale, may have his rabbits completely under control, and be able to catch them up at any time. On no account must he allow the rabbits to burrow all over his fields. He should keep them to their lodgings, and put

Digitized by Google

his foot on any fresh holes as soon as begun. In this way he will keep his small extent of pasture clean and in good condition, and every yard of pasture means money. If it be wished to shut the rabbits out of their burrows into the open field for shooting purposes, a few armfuls of sticks, bracken, or litter, or all the three, may be put down here and there before shooting, as a temporary shelter to which the rabbits can run, and be dislodged by a kick from the foot; but such hillocks must not remain, as they kill the grass.

In other things the allotment holder should proceed in the same general way as the farmer, and, above all, he must be sure to stock his ground to its utmost capacity, and kill off as need be. The state of the pasture and condition of the rabbits will at any time show whether

Digitized by Google

the ground be overstocked or otherwise. My experience is that it takes a large number of rabbits to keep pace with the grass in June and July, when the greater portion of the rabbits are small, and do not go far from their burrows. It is toward autumn that they overtake the grass, if they do so at all, and by that time many of the bigger ones are ready to go. For manure the cottager should avail himself of any refuse, decaying vegetable matter, or manure which he can pick up or afford, keeping in mind lime and salt; and all except the salt should be spread on the land in autumn, after the rabbits have been reduced to the winter stock.

Cottagers have often been advised to breed rabbits for profit by the hutch-system in small enclosures. I cannot speak from experience of this system,

Digitized by Google

but it is attended, I believe, according to its advocates, with considerable outlay at the beginning and labour afterwards. The natural system of farming rabbits, as the plan advocated in this work may be called, entails but little trouble and expense comparatively, and the tenant or owner of a few acres may devote his land to rabbits in that way without encroaching on his time to any serious extent, especially during the breeding season, when the wisest plan is to leave the fields alone, and keep them as quiet as possible.

For information on all other points connected with rabbit-farming, both farmers and allotment holders are referred to the previous chapters of this book.

Digitized by Google

PRINTED BY WILLIAM BLACKWOOD AND SONS.

Digitized by Google

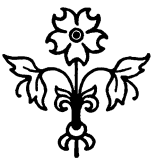
BOOKS

ON

RURAL AFFAIRS

WILLIAM BLACKWOOD AND SONS
EDINBURGH AND LONDON

Digitized by Google



Digitized by Google

FOURTH EDITION, REVISED AND ENLARGED.

STEPHENS'
BOOK OF THE FARM.

DETAILING THE LABOURS OF THE FARMER, FARM-STEWARD, PLOUGHMAN, SHEPHERD, HEDGER, FARM-LABOURER, FIELD-WORKER, AND CATTLE-MAN.

Fourth Edition, Revised and in great part Rewritten,

By JAMES MACDONALD, of the 'Farming World,' &c. ASSISTED BY MANY OF THE LEADING AGRICULTURAL AUTHORITIES OF THE DAY. Illustrated with 40 Portraits of Animals, Plans of Farm Buildings, and upwards of 700 Engravings.

Handsomely bound in 3 Volumes, Royal 8vo, with leather back, gilt top, Price £3, 3s.

Also in 6 Divisions, bound in cloth, 10s. 6d. each.

STANDARD.—"The most comprehensive work on practical farming ever written."

SCOTSMAN.—"Mr Macdonald has made the work what it was when first published by its author, the standard work on everything relating to the farm."

FARMER.—"In all matters relating to practical agricultural life, this work is, in the most comprehensive meaning of the term, encyclopædic, entertaining, and most reliable."

GLOUCESTER CHRONICLE.—"The completed book literally constitutes a treasure-house for all engaged in our greatest national industry."

SCOTTISH LEADER.—"The one standard manual.....All that is good in Stephens' text has been retained, while an immense amount of fresh information has been incorporated."

AGRICULTURAL GAZETTE.—"The great merit of the book always was its attention to detail, and in this respect, we believe, it will be found more serviceable than ever."

FARM, FIELD, AND FIRESIDE.—"The most complete and important description of improved agricultural practice that we have."

DAILY CHRONICLE.—"Mr Macdonald has performed his task with great ability."

Digitized by Google

EDITED BY JAMES MACDONALD.

PRINGLE'S LIVE-STOCK OF THE FARM.

Third Edition, Revised. Crown 8vo, 7s. 6d.

ST JAMES'S GAZETTE.—"It is a complete guide to the best practice in the breeding and management of horses and cattle, sheep and pigs, cows and poultry."

WITH MEMOIR OF THE AUTHOR.

M'COMBIE'S CATTLE AND CATTLE-BREEDERS.

New Edition, Enlarged. Crown 8vo, 3s. 6d.

NORTH BRITISH AGRICULTURIST.—"This very interesting book should be in the hands of every farmer, stock-owner, and stock-attendant."

HISTORY OF POLLED ABERDEEN OR ANGUS CATTLE.

GIVING AN ACCOUNT OF THE ORIGIN, IMPROVEMENT, AND CHARACTERISTICS OF THE BREED. By JAMES MACDONALD and JAMES SINCLAIR, Sub-Editor 'Irish Farmers' Gazette.'

Illustrated with numerous Animal Portraits.

Large crown 8vo, 12s. 6d.

FIELD.—"This is a book for cattle-breeders to buy and to *study*."

STEPHENS' CATECHISM OF PRACTICAL AGRICULTURE.

[*New Edition in preparation.*

Digitized by Google

BLACKFACED RAM, "SEVENTY-TWO."—From 'The Book of the Farm' (Reduced).

Digitized by Google

ADVICE TO PURCHASERS OF HORSES.

By JOHN STEWART, V.S.

New Edition, 2s. 6d.

STABLE ECONOMY.

A Treatise on the Management of Horses in relation to Stabling, Grooming, Feeding, Watering, and Working. By the Same Author.

Seventh Edition, fcap. 8vo, 6s. 6d.

THE HORSE-OWNERS' SAFE-GUARD.

A Handy Medical Guide for every Man who owns a Horse. By G. S. HEATLEY, M.R.C.V.S.

Crown 8vo, 5s.

Yorkshire Gazette.—"We have here concentrated together nearly all the ailments and infirmities to which that noble and useful animal, the horse, can be subject."

THE STOCK-OWNERS' GUIDE.

A Handy Medical Treatise for every Man who owns an Ox or Cow. By the Same Author.

Crown 8vo, 4s. 6d.

Farmers' Gazette.—"Mr Heatley has produced a work that will prove of the highest service to stock-owners. The arrangement is admirable, and the various diseases are described in clear and simple language."

MANURES AND THE PRINCIPLES OF MANURING.

By C. M. AIKMAN, M.A., B.Sc., Lecturer on Agricultural Chemistry, West of Scotland Technical College; Examiner in Chemistry, University of Glasgow, &c.

Crown 8vo. [*Shortly.*

Digitized by Google

A NEW EDITION.

PROF. JOHNSTON'S ELEMENTS OF AGRICULTURAL CHEMISTRY.

From the Edition by SIR CHARLES A. CAMERON, M.D. Revised and brought down to date by C. M. AIKMAN, M.A., B.Sc., F.R.S.E., &c., Lecturer on Agricultural Chemistry, West of Scotland Technical College.

Crown 8vo. [*In preparation.*

AN ENTIRELY NEW EDITION.

PROF. JOHNSTON'S CATECHISM OF AGRICULTURAL CHEMISTRY.

Revised and enlarged from the Edition by SIR CHARLES A. CAMERON. By C. M. AIKMAN. With Engravings. 1s.

ABERDEEN JOURNAL.—"An admirable compendium of the elements of agricultural chemistry, and forms an excellent introduction to a more detailed study of the subject. Its clear, concise, and simple way of stating facts renders it specially serviceable for the study of the young."

FARMYARD MANURE:

ITS NATURE, COMPOSITION, AND TREATMENT. By C. M. AIKMAN, M.A., B.Sc., F.R.S.E., F.I.C., F.C.S., Lecturer on Agricultural Chemistry, West of Scotland Technical College; Examiner in Chemistry, University of Glasgow, &c.

Crown 8vo, 1s. 6d.

THE HANDY BOOK OF BEES, AND THEIR PROFITABLE MANAGEMENT.

By A. PETTIGREW. Fifth Edition, Enlarged, with Engravings.

Crown 8vo, 3s. 6d.

LAND AND WATER.—"We recommend his book to all who wish to spread a knowledge of this useful art among their neighbours and friends."

Digitized by Google

NEW EDITION.

Revised and Condensed by Lieut.-Colonel BAILEY, R.E., Edinburgh University.

THE FORESTER:

A PRACTICAL TREATISE ON THE PLANTING, REARING, AND GENERAL MANAGEMENT OF FOREST-TREES. By JAMES BROWN, LL.D.

[*In preparation.*

SOME OPINIONS OF THE PRESS.

JOURNAL OF FORESTRY.—"As a practical text-book for the young forester the work is invaluable, and no intelligent young man following the profession ought to rest satisfied until he is in possession of a copy, and has carefully studied it in all its details. There is scarcely a point on any practical subject connected with forestry upon which the work may not be consulted with advantage, even by men of considerable experience."

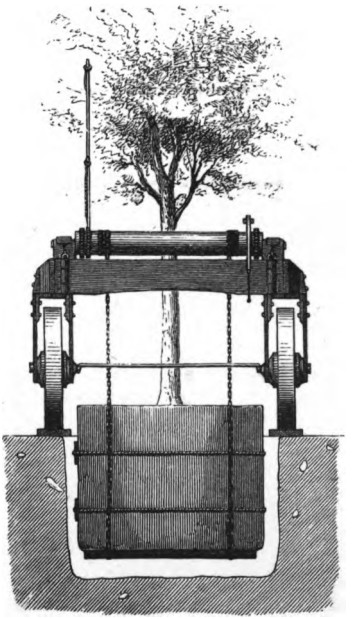
LAND AND WATER.—"There are some methods of tree-culture in different parts of the world of interest to the English forester which are now for the first time brought before the arboriculturist and fully described. But this is only one feature of a book which is exhaustive in its treatment of all subjects connected with forestry. It is an authoritative guide, and a reference book which no forester should be without."

PALL MALL GAZETTE.—"Dr Brown has condensed a perfect encyclopedia of everything relating to woodcraft as now understood and practised in every part of the civilised world."

MORNING POST.—"We have here all that any one can desire, either as history of forest-trees, or their life-history, or their practical management."

Digitized by Google

Specimen Illustration from 'THE FORESTER.'



FRENCH TREE-TRANSPLANTING MACHINE.

Digitized by Google

DEDICATED TO THE EARL OF SEAFIELD.

THE LARCH:

A PRACTICAL TREATISE ON ITS CULTURE AND GENERAL MANAGEMENT. By CHRISTOPHER YOUNG MICHIE, Forester, Cullen House. With Illustrations of remarkable Trees. New and Cheaper Edition, with an Introductory Chapter on the LARCH DISEASE.

Crown 8vo, 5s.

JOURNAL OF FORESTRY.—"Within its pages will be found more information upon the best modes of treatment and culture of the larch tree, whether in the nursery or plantation, than in any other book extant in the English language."

BANFF JOURNAL.—"The work is a most valuable addition to our standard literature on arboriculture. The lover of trees will find the book full of curious and interesting material; while to owners and managers of woodlands the volume must prove of the highest practical utility."

THE PRACTICE OF FORESTRY.

By the SAME AUTHOR. With Illustrations.

Crown 8vo, 6s.

MORNING POST.—"A thoroughly practical and sensible work..... The author gives much excellent advice, the result of practical knowledge and careful study."

FIELD.—"This is a manual of practice of the very best kind, as good in its way as 'The Larch,' by the same intelligent, observant, experienced forester."

JOURNAL OF HORTICULTURE.—"He gives information founded on long practice on almost every point connected with the subject."

Digitized by Google

THE STEWART LARCH.—From Mr Michie's Treatise.

Digitized by Google

HANDY BOOK OF THE FLOWER-GARDEN:

BEING PRACTICAL DIRECTIONS FOR THE PROPAGATION, CULTURE, AND ARRANGEMENT OF PLANTS IN FLOWER-GARDENS ALL THE YEAR ROUND. Embracing all classes of Gardens, from the largest to the smallest. With Engraved Plans. By DAVID THOMSON, Gardener to His Grace the Duke of Buccleuch, K.G., at Drumlanrig.

Fifth Edition, crown 8vo, 5s.

THE FIELD.—"We are acquainted with the results produced by the able author, as well as with his book, and therefore can pronounce the book the best on the subject yet written or likely to be written for a long time to come."

HANDY BOOK OF FRUIT CULTURE UNDER GLASS.

By the SAME AUTHOR. Second Edition, Revised and Enlarged. Illustrated with numerous Engravings.

Crown 8vo, 7s. 6d.

SCOTSMAN.—"No work of the kind of which we have any knowledge is at all to be compared with this. It is the result of ripe experience, close thought, and ample acquaintance with the subject in all its parts.....A book that ought to be in the hands of every gardener, of every amateur fruit-grower, and, indeed, of every one who desires to know the best that can be known on the subject."

THE HORTICULTURAL EXHIBITORS' HANDBOOK.

A TREATISE ON CULTIVATING, EXHIBITING, AND JUDGING PLANTS, FLOWERS, FRUITS, AND VEGETABLES. By W. WILLIAMSON, Gardener; Revised by MALCOLM DUNN, Gardener to His Grace the Duke of Buccleuch and Queensberry, Dalkeith Park. Crown 8vo, 3s. 6d.

Digitized by Google

A PRACTICAL TREATISE ON THE CULTIVATION OF THE GRAPE VINE.

By WILLIAM THOMSON, Tweed Vineyard.

Tenth Edition, 8vo, 5s.

JOURNAL OF HORTICULTURE.—"A thoroughly practical and sure guide to the cultivation of the vine."

CULTIVATED PLANTS:

THEIR PROPAGATION AND IMPROVEMENT. By F. W. BURBIDGE, Author of 'The Narcissus, its History and Culture,' &c. With 191 Engravings, and Index.

Crown 8vo, pp. 630, 12s. 6d.

DOMESTIC FLORICULTURE, WINDOW-GARDENING, AND FLORAL DECORATIONS.

BEING DIRECTIONS FOR THE PROPAGATION, CULTURE, AND ARRANGEMENT OF PLANTS AND FLOWERS AS DOMESTIC ORNAMENTS. By the SAME AUTHOR. Crown 8vo, with upwards of 200 Illustrations on Wood.

New Edition, Revised and Enlarged, 7s. 6d.

ACADEMY.—"A charmingly illustrated *vade mecum* on Window-Gardening, Floral Decorations, and the whole field of adaptation of floral science to domestic ornament.....An admirable companion for every boudoir."

Digitized by Google

NORFOLK BROADS AND RIVERS;

OR, THE WATER-WAYS, LAGOONS, AND DECOYS OF EAST ANGLIA. By G. CHRISTOPHER DAVIES, Author of 'The Swan and her Crew.'

New Edition. Illustrated with Seven full-page Plates. Crown 8vo, 6s.

FIELD.—"A succession of charming pictures of the Broads, all tinged with personal adventure."

LAND AND WATER.—"It is doubtless the handsomest as well as the most interesting of all descriptions of the Broads, and will preserve the memory of a paradise for naturalists and sportsmen."

THE ANGLER AND THE LOOP-ROD.

By DAVID WEBSTER. With Portrait of the Author, Four Coloured Plates, and other Illustrations.

Crown 8vo, 7s. 6d.

NORTHERN CHRONICLE.—"Mr Webster's book is simply charming."

SCOTSMAN.—"There have been few books produced lately of more practical interest to the angler than this."

PALL MALL GAZETTE.—"We heartily recommend Mr Webster's book to the fraternity of anglers."

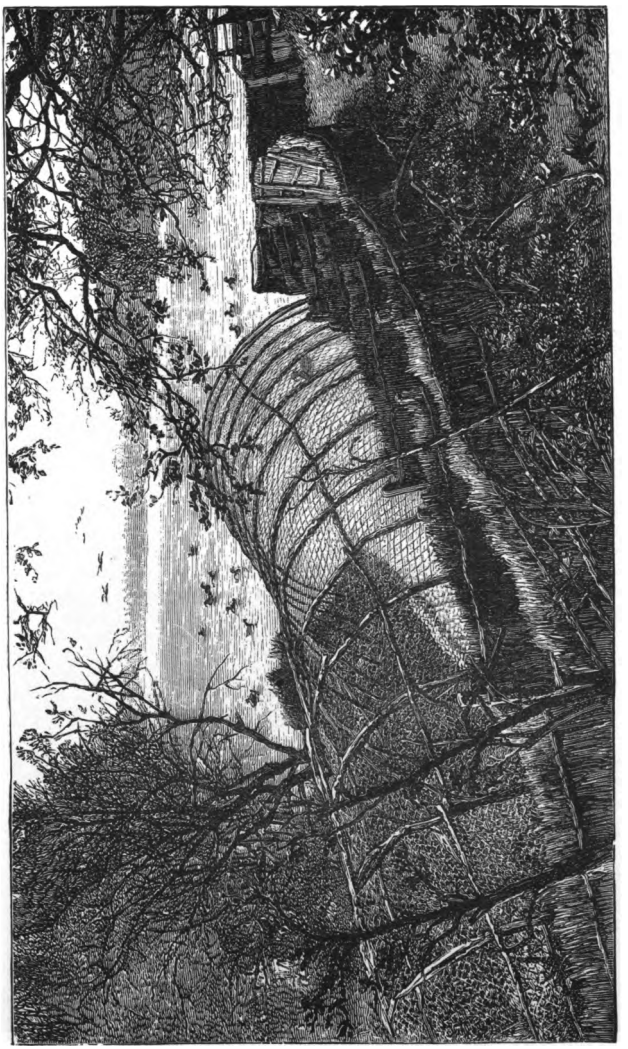
ANGLING SONGS.

By THOMAS TOD STODDART. With a MEMOIR by ANNA M. STODDART.

Crown 8vo, with a Portrait, 7s. 6d.

SATURDAY REVIEW.—"It is a book of which a man should have two copies—one to keep with his fly-book in the pocket of his coat, and to lie in the boat with the landing-net and the creel; another copy to bind in morocco and place among the honoured volumes on his shelves."

Digitized by Google



DECOY-PIPE, looking towards the Entrance.—From 'Norfolk Broads and Rivers.'

Digitized by Google

BY "A SON OF THE MARSHES."

WITHIN AN HOUR OF LONDON TOWN.

AMONG WILD BIRDS AND THEIR HAUNTS. Edited by J. A. OWEN.

Second Edition. Crown 8vo, 6s.

TIMES.—"A charming volume, full of the life and breath of the wild country, still to be found by those who know where to look for it within easy reach of London."

DAILY TELEGRAPH.—"This keen rural scribe shows a rare gift for the observation of nature. Many chapters in the present book are devoted to pictures of bird-life on the secluded slopes of Surrey, and these are specially delightful reading."

ON SURREY HILLS.

Third Edition. Crown 8vo, 6s.

ANTI-JACOBIN.—"This is one of the most delightful of those nature-books which of late years have provided welcome escape from the subjectiveness, the wearisome 'psychology' of modern imaginative literature.....The chapter devoted to 'A Forest Fire' is a masterpiece of literary draughtsmanship."

COUNTY GENTLEMAN.—"The very best book that could be placed in the hands of a lover of nature."

NEW AND CHEAPER EDITION.

ANNALS OF A FISHING VILLAGE.

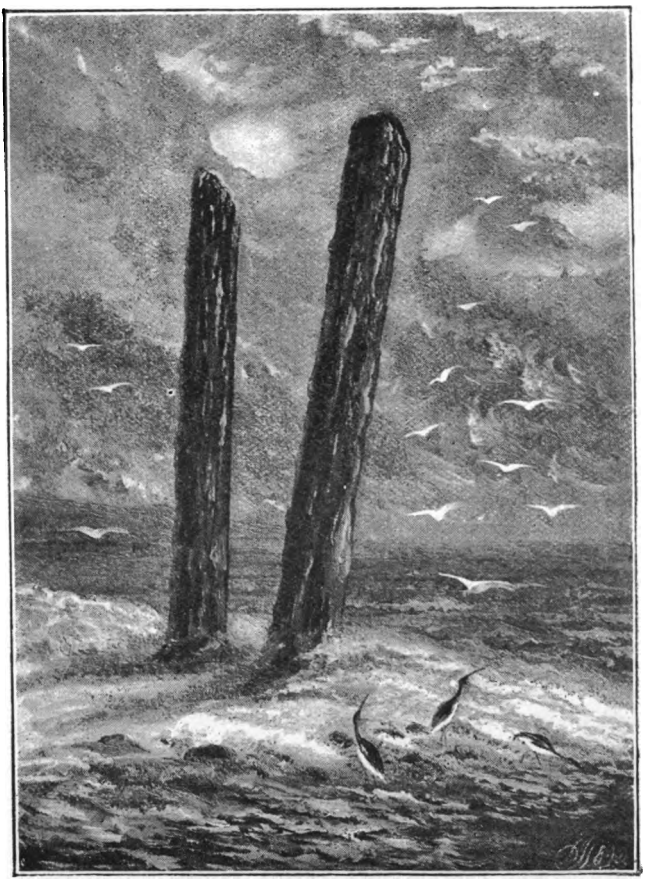
DRAWN FROM THE NOTES OF "A SON OF THE MARSHES." Edited by J. A. OWEN.

Cheaper Edition. Crown 8vo, 5s.

Also with Seven Full-page Illustrations. Crown 8vo, 7s. 6d.

GUARDIAN.—"No one who takes up the story of 'Den's' delightful life, and has been introduced to 'Scoot' and 'Winder,' to 'Titlark' and 'Genus,' will put the book down again until they have with much regret finished its last page."

Digitized by Google



FISHERMEN'S GUIDE-POSTS, CREEK MOUTH.
From Illustrated Edition of 'Annals of a Fishing Village.'

Digitized by Google

NEW EDITION. IN ONE VOLUME.

THE MOOR AND THE LOCH.

CONTAINING MINUTE INSTRUCTIONS IN ALL HIGHLAND SPORTS, WITH WANDERINGS OVER CRAG AND CORRIE, FLOOD AND FELL. By JOHN COLQUHOUN.

Seventh Edition, demy 8vo.

With a Portrait of the Author, and other Illustrations.
Price 21s.

ACADEMY.—"He presents all lovers of Scotland with the completest details of every Highland sport, on all of which he is an unexceptionable authority; and with what many will value even more, a series of life-like sketches of the rarer and more interesting animals of the country.....Henceforth it must necessarily find a place in the knapsack of every northern tourist who is fond of our wild creatures, and is simply indispensable in every Scotch shooting-lodge."

SATURDAY REVIEW.—"A complete encyclopedia, embracing all recognised sports, with hints innumerable, and suggestions drawn from his own experience."

THE WORLD.—"The book is one written by a gentleman for gentlemen, healthy in tone, earnest in purpose, and as fresh, breezy, and life-giving as the mountain air of the hills amongst which the sport it chronicles is carried on."

MORNING POST.—"A better book of its kind it would be difficult to imagine or desire, and the latest edition now before the public will, without doubt, remain at the head of this type of sporting literature for many years to come."

PALL MALL GAZETTE.—"The book abounds with anecdote and incident, as well as instruction.....The most experienced will derive both pleasure and profit from comparing notes and digesting the conclusions of one of the most successful sportsmen of the century."

SCOTSMAN.—"It is at once the most instructive book upon its own subject, and a delightful piece of literature."

Digitized by Google

HEAD OF A HART.—From 'The Moor and the Loch.'

Digitized by Google

SECOND EDITION, REVISED AND ENLARGED.

SPORT IN THE HIGHLANDS AND LOWLANDS OF SCOTLAND WITH ROD AND GUN.

By TOM SPEEDY. With Illustrations by Lieut.-Gen. HOPE CREALOCKE, C.B., C.M.G., and others.

8vo, price 15s.

TIMES.—"An admirable handbook to Scottish wild sports."

SCOTSMAN.—"One of the best books on sporting subjects extant. .....It is a delightful book, and one of genuine usefulness."

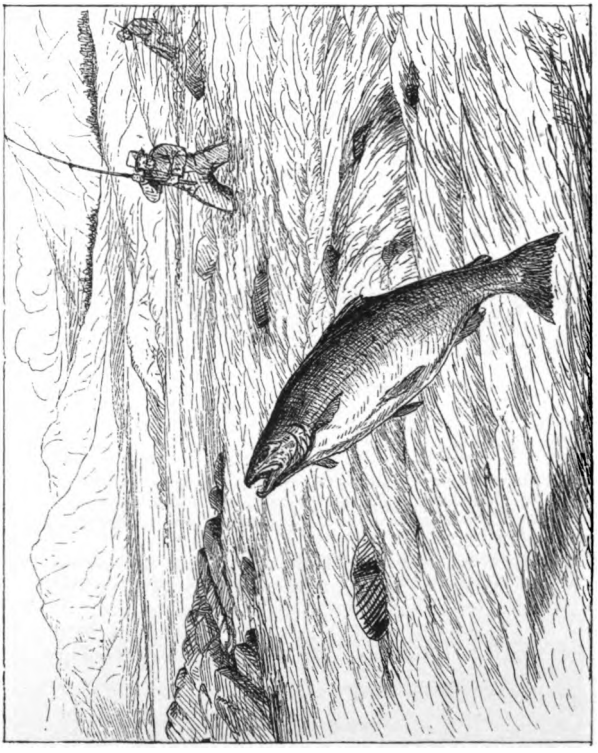
LAND AND WATER.—"The author treats of all kinds of sport to be obtained with rod and gun, in a manner certain to be of great interest.....Mr Speedy writes with a thorough knowledge of his subject, and the book throughout is eminently practical."

TRUTH.—"Incomparably the best book of the kind is Mr Speedy's 'Sport in the Highlands and Lowlands of Scotland.'.....The most accurate, practical, comprehensive and trustworthy of its kind..... It is extremely interesting, for the author is nearly as much of a naturalist as of a sportsman, and describes brightly what he has keenly observed."

PALL MALL GAZETTE.—"Mr Speedy's book contains simple but at the same time thoroughly trustworthy instructions, by following which the youngest sportsman may comport himself discreetly in the field."

ST JAMES'S GAZETTE.—"Very interesting as well as useful.....Mr Speedy possesses considerable descriptive power as well as practical knowledge.....Anglers will find as much amusement from his book as shooters; and a better book for any man interested in sport, to carry into the country with him, need not be required."

Digitized by Google



SALMON-FISHING.—From 'Sport in the Highlands.'

Digitized by Google

CHRISTOPHER IN HIS SPORTING JACKET.

RECREATIONS OF CHRISTOPHER NORTH.

2 vols., New Edition, with Portrait, 8s.

TIMES.—"Welcome, right welcome, Christopher North; we cordially greet thee in thy new dress, thou genial and hearty old man, whose 'Ambrosian Nights' have so often in imagination transported us from solitude to the social circle, and whose vivid pictures of flood and fell, of loch and glen, have carried us in thought from the smoke, din, and pent-up opulence of London, to the rushing stream or tranquil tarn of those mountain-ranges."

SCOTCH LOCH-FISHING.

By "BLACK PALMER."

Crown 8vo. Interleaved with blank paper. 4s.

DUNDEE ADVERTISER.—"The great charm of 'Black Palmer's' work is its simplicity. He eschews technicalities, and is thoroughly practical. And the angler who takes up the little book will be reluctant to stop till he has perused every word of it, and will only lay it down after mentally resolving to read it again from beginning to end at the earliest opportunity.....'Black Palmer's' notes abound in practical hints."

BELL'S LIFE IN LONDON.—"Both to the tyro and the expert angler 'Scotch Loch-Fishing'.....should prove a valuable guide."

RAMBLES WITH A FISHING-ROD.

By E. S. ROSCOE.

Crown 8vo, 4s. 6d.

ST JAMES'S GAZETTE.—"Such books as Mr Roscoe's are our only guides to Continental sport; nor could the traveller who desires to explore the resources of the rivers of Germany and of Switzerland desire a better companion than 'Rambles with a Fishing-Rod.'"

BELL'S LIFE IN LONDON.—"It is a right pleasant pocket companion."

Digitized by Google

A HANDBOOK OF DEER-STALKING.

By ALEXANDER MACRAE,
Late Forester to Lord Henry Bentinck.

WITH INTRODUCTION
By HORATIO ROSS, ESQ.

Fcap. 8vo, with two Photos from Life, 3s. 6d.

UNITED SERVICE GAZETTE.—"A work not only useful to sportsmen, but highly entertaining to the general reader."

SPORTING AND DRAMATIC NEWS.—"The writer of this valuable little book speaks with authority, and sums up in a few pages hints on deer-stalking which the experience of a lifetime has enabled him to put forth.....We can only recommend every one who pursues the fascinating sport of which the author writes, to glance through, and indeed to read carefully, this handbook."

SCOTSMAN.—"An interesting little book, alike because of the knowledge which its author displays of his subject, and of the simple style in which it is written. It is a handbook such as sportsmen must have long desired."

THE SHOOTER'S DIARY:

FOR RECORDING THE QUANTITY OF GAME KILLED, THE TIME AND PLACE, NUMBER OF GUNS, AND NAMES OF PARTIES, &c. With Memoranda of Shooting Occurrences, Engagements, &c.

Oblong 8vo, 4s.

Digitized by Google

Digitized by Google

Digitized by Google

Digitized by Google

W. B. CLARKE & Co.
BOOKSELLERS STATIONERS
BOSTON.

Digitized by Google